SOKAOGON CHIPPEWA COMMUNITY

Final Report

WDNR Planning Grant – LPL-871-03

Metonga Lake Zebra Mussel Project 2, Phase 2

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INTRODUCTION

Study Area

Lake Metonga is a 1,991-acre, moderately deep (26 m), mesotrophic drainage lake located near Crandon, WI. Outlet Creek, the outlet of Lake Metonga, flows into Swamp Creek which eventually passes through the Sokaogon Chippewa Community Indian Reservation (Map 1). Lake Metonga is clear, highly transparent, moderately-hard, and alkaline. Bottom substrate consists of sand (45%), gravel (45%), rock (5%), and muck (10%). Because of its high water clarity, aquatic plants grow in water depths up to 5 m.

The fish community is dominated by walleye, smallmouth bass, northern pike, rock bass and yellow perch. The walleye population is self-sustaining but requires supplemental stocking to maintain moderate adult populations of 2.4 - 3.7 fish per acre. Lake Metonga receives high recreational and fishing use with many fishing tournaments held each year. In addition, the Sokaogon Chippewa Community (herein referred to as the "Tribe") exercises treaty rights by harvesting adult walleye from Lake Metonga in the spring. Because of intense tribal and angling harvest, the walleye population has been well studied by fish and game agencies. Walleye surveys to estimate adult population abundance have been performed every 3 – 5 years since 1989; juvenile walleye surveys have been conducted annually (except 1995) since 1985. Other species have been studied but not as intensively.

Three exotic species, the rusty crayfish, Eurasian watermilfoil, and the zebra mussel, have been introduced into Lake Metonga. Rusty crayfish were introduced in the early 1970's. Current population abundance is reported as low. Eurasian watermilfoil was first discovered in 1997. The Lake Metonga Association (LMA) established an aquatic vegetation action team to monitor and control Eurasian watermilfoil stands. In July 2001, zebra mussels were found in Lake Metonga. The introduction of zebra mussels may pose the biggest threat to the structure and function of the Lake Metonga ecosystem.

Zebra Mussel Information

Zebra mussels look like small clams with a yellowish or brown "D" shaped shell, usually with dark and light colored stripes. They can reach two inches in length and generally live 2-3 years. Zebra mussels are native to the Caspian Sea region of Asia. They were discovered in Lake St. Clair near Detroit in 1988 and currently are found in all of the Great Lakes, many rivers, and inland lakes. Zebra mussels were first found in Wisconsin waters of Lake Michigan, Racine Harbor in 1991.

Zebra mussel reproduction begins as water temperatures warm above 12 ^{o}C. They are prolific reproducers; a mature female can release up to 1 million eggs per season. If conditions are optimal for survival, densities can reach 100,000/m^2. Zebra mussels prefer hard substrates, particularly rocky substrate, but have been observed on sand particles as small as 1 mm. Where preferred substrate is limiting, zebra mussels are known to settle and attach to unionid clams, sticks and logs, and aquatic macrophytes subsequently attaching to each other to form druses.

Zebra mussels are filter feeders capable of filtering 1 L of water/day for each individual. They effectively remove suspended particles such as phytoplankton and zooplankton, depositing undigested and digested particles as pseudofeces and feces. Phytoplankton abundance can be a limiting factor in zebra mussel expansion.

Zebra mussels have been shown to increase water transparency and macrophyte coverage and reduce turbidity, chlorophyll a levels, and phytoplankton and zooplankton biomass. Although effects on fish populations have not been well studied, reduced zooplankton biomass has been speculated to have impacts on fish species (perch and walleye) that are planktivorous during part of their development. Furthermore, deposition of pseudofeces and feces has been shown to enhance the food base for benthic plants and animals including amphipods and crayfish. Zebra mussels could potentially shift production from the pelagic to the benthos creating conditions more favorable for smallmouth bass and less favorable for walleye.

In spring 2002, the Sokaogon Chippewa Community initiated a long-term study in partnership with the Lake Metonga Association (LMA), the U.S. Fish and Wildlife Service (USFWS), the Great Lake Indian Fish and Wildlife Commission (GLIFWC), and the Wisconsin Department of Natural Resources (WDNR). Funds from the Bureau of Indian Affairs – Tribal Management and Development Program and the WDNR Lake Planning Grant Program were used to perform the study. The study was designed to address possible ecological impacts of zebra mussels to Lake Metonga and the potential spread of zebra mussels downstream to the Wolf River (Map 1). This study was continued in 2003.

SCOPE OF WORK

Surveys were performed during this project to collect data on Lake Metonga in the following areas:

1. Water chemistry/physical data;
2. Phytoplankton;
3. Zooplankton;
4. Zebra mussels;
5. Crayfish;
6. Fish –walleye juvenile;
7. Fish – adult and juvenile condition; and
8. Fish – walleye and yellow perch larval diet.

METHODS

Water chemistry

The number of sample sites was reduced from 3 to 1 for 2003. The Deep Hole site (Map 2) was selected over the North and Farmer's Bay sites due to the existence of baseline data for Deep Hole and lack of spatial differences amongst measured parameters between sites. Lake Metonga water chemical and physical data were collected biweekly at Deep Hole site beginning on May 8 and continuing through October 24. Depth profiles for dissolved oxygen, pH, and water temperature were determined at each site in addition to Secchi depth and total phosphorous and total nitrogen. Calcium, hardness, and alkalinity levels were determined monthly at Deep Hole site. ERA Laboratories, Duluth, MN, analyzed samples for phosphorous, nitrogen, calcium, hardness, and alkalinity. Samples for these parameters were collected using water collected during the collection of phytoplankton described below. All other parameters were measured by the Tribal fisheries biologist using a multi-parameter instrument (YSI) and a Secchi disk. A replicate sample was collected every ten sampling events for all chemical parameters for QA/QC purposes.

Phytoplankton
The number of sample sites was reduced from 3 to 1 for 2003. The Deep Hole site (Map 2) was selected over the North and Farmer's Bay sites due to the existence of baseline data for Deep Hole and lack of spatial differences amongst measured parameters between sites. Phytoplankton were collected biweekly from Lake Metonga at Deep Hole site beginning on May 8 and continuing through October 24. Monthly, Deep Hole site was sampled in triplicate for QA/QC purposes.

An integrated phytoplankton sample was collected by lowering a piece of Tygon tubing (ID: 3.2 cm) to a depth just above the thermocline (obtained from water temperature depth profile described above). If no thermocline was present, sampling continued to maximum depth of 10 m. When the desired depth was reached, the above-water tubing opening was plugged with a boat plug, creating a core phytoplankton sample of the water column. The contents of the tubing were placed into a sample holding container, where a subsample was collected and preserved for identification and enumeration. Additional water samples were collected for water chemistry measurements as describe above, including a sample for chlorophyll a. Richard Dufford, Fort Collins, CO was contracted to perform phytoplankton identification and enumeration providing metrics such as density, species richness, biovolume, average cell dimension (ACD), and greatest average linear dimension (GALD). Later at the laboratory, the chlorophyll a sample was filtered and sent to ERA Laboratories, Duluth, MN for analysis. The tubing and sample holding container were rinsed twice between sites with water from the site to be sampled.

Zooplankton
The number of sample sites was reduced from 3 to 1 for 2003. The Deep Hole site (Map 2) was selected over the North and Farmer's Bay sites due to the existence of baseline data for Deep Hole and lack of spatial differences amongst measured parameters between sites. Phytoplankton were collected biweekly from Lake Metonga at Deep Hole site beginning on May 8 and continuing through October 24. Monthly, Deep Hole site was sampled in triplicate for QA/QC purposes.

An integrated zooplankton sample was collected by lowering a standard plankton net (80 um mesh, 30 cm opening x 150 cm length) to the lake bottom even if a thermocline was present. After the net was lowered to within 1 m of the lake bottom, it was raised (towed) to the surface at a rate (0.5 m/sec) that would not clog the net. A 10 m horizontal tow was taken at Farmers Bay, because of its shallow depth (~8 ft). The samples were properly preserved with formaldehyde for identification and enumeration. Bart DeStatio, Appleton, WI was contracted to perform identification and enumeration including zooplankton metrics such as species richness, biovolume, and density.

Zebra Mussels
Zebra mussel artificial plate samplers were deployed on May 20, before zebra mussel reproduction (<12 ^{o}C). Samplers were attached to docks by rope so that the bottom sampler plate was approximately six inches from lake bottom. Nine samplers were set on Lake Metonga, one sampler was set on Outlet Creek approximately 100 m downstream from the Lake Metonga outlet structure (Map 3), and one was set at just below the confluence of Swamp Creek and the Wolf River. The LMA coordinated the arrangement of dock locations that would be less likely to be disturbed or vandalized. Zebra mussels were removed from samplers on September 18, properly preserved, enumerated, and disposed of properly. Although samplers would be effective into October, samplers were retrieved in September due to dock removal by owners.

In October, additional sampling occurred at 5 sites consisting of representative benthic substrates (Map 4) at depths up to 10 m using standardized survey transects and quadrat samplers. Surveys were performed using SCUBA with assistance provided by the USFWS and GLIFWC divers. A maximum depth of 10 m was chosen because zebra mussels had not been found below this depth and the summer thermocline historically occurred around this depth. Below the thermocline, dissolved oxygen levels drop quickly and approach 0 mg/L as the summer progresses. All zebra mussels >10 mm, located in the quadrat sampler were enumerated. In addition, zebra mussels were randomly collected from various substrates to determine the length distribution and condition of the population. Surveys of the Wolf River were abandon due to low water clarity; instead a juvenile zebra mussel sampler was placed below the Swamp Creek – Wolf River confluence as described above.

Zebra mussel veliger sampling occurred at three sites (Map 5) monthly during the summer months using WDNR standardized protocol. A standard plankton net (64 um mesh, 50 cm opening x 280 cm length) was used to collect veligers. Samples were properly preserved and sent to a WDNR laboratory for processing and quantification. Sample bottles and preservatives were provided by the WDNR.

Crayfish

Crayfish were sampled in late August using standard wire-mesh minnow traps at six sites (Map 6). Sites of representative benthic substrates were chosen including those with aquatic macrophytes present. Minnow trap openings were enlarged to allow crayfish to enter. Sampling design and survey protocol recommended by the North Temperate Lakes Long-Term Ecological Research Station (Trout Lake) were used. At each site, 3 traps at depths of 1.7, 3.3, and 5 m were baited with a standard amount of beef liver (24 g). Every 24 hours for a total of 72 hours, traps were retrieved and all crayfish were removed, identified to species, and measured from head to tail.

Fish – Walleye Juvenile

A fall juvenile walleye survey was performed September 29 on Lake Metonga using WDNR standardized protocol. Age-0 and age-1 walleye were targeted. The survey was performed using an electrofishing boat, providing pulsed DC current, with two netters. The entire shoreline of Lake Metonga was surveyed.

Fish – Adult Condition

The relative weight (Wr) and other condition factors of northern pike, walleye, and yellow perch were determined on Lake Metonga. Fish were collected using an electrofishing boat in late October. Total length and weight of fish were measured.

Fish – Walleye and Yellow Perch Diet

The diet of age-0 walleye and yellow perch were determined using protocols recommended by the WDNR Escanaba research staff. A plankton net (760 um mesh, 50 cm opening x 250 cm length) was used to collect fish while they occupied pelagic habitat (Early June to early July); a bag seine (10.7 m x 1.8 m x 3.2 mm) was used to collect fish while they occupied littoral habitat (August). Surveys occurred at several sites (Map 6) weekly with the plankton net and monthly with the bag seine. Fish were identified and enumerated in the field and preserved in 10% formalin. At the lab, the stomach and digestive tract from a representative sample of fish form each survey were excised. Surveys were stopped when targeted fish were no longer present in the respective habitats.

RESULTS AND DISCUSSION

Because this is the second year of a long-term study, very little advanced statistical analyses was used on the data. Please refer to the appendices for each study component listed below:

1 Water chemistry/physical data (Appendix A and B);
2 Phytoplankton (Appendix C);
3 Zooplankton (Appendix D);
4 Zebra mussels (Appendix E);
5 Crayfish (Appendix F);
6 Fish –walleye juvenile (Appendix G);
7 Fish – adult and juvenile condition (Appendix G); and
8 Fish – walleye and yellow perch larval diet (not included).

Study results indicate that zebra mussels have been reproducing in Lake Metonga for 3-4 years. They are found in suitable habitat throughout the lake but have not been found on samplers in Outlet and Swamp Creeks downstream of Lake Metonga. Relative to Great Lakes averages (2000 zm/m^2), Lake Metonga adult zebra mussel densities are low; however, they did increase in 2003 to 31.7 zm/m^2, from 6.7 zm/m^2 in 2002. Approximately 89% of zebra mussels surveyed were found on gravel or cobble substrates. Zebra mussel reproduction increased dramatically with average juvenile sampler densities increasing from 480 zm/m^2 in 2002 to 76,710 zm/m^2 in 2003. Consequently, much higher juvenile and adult zebra mussel densities are expected for 2004. Calcium levels were reduced slightly, suggesting that the growing zebra mussel population is using this mineral for shell formation.

Phytoplankton and zooplankton communities changed from 2002 to 2003. Reductions in species richness, species densities, and biovolume occurred in both communities. Although changes could be attributed to natural variability, these changes are most likely from zebra mussels. Plankton community reductions are a predicted effect of zebra mussels, and this is also supported by reductions in chlorophyll a and Secchi depth measurements. Crayfish numbers decreased slightly from 2002-2003. This could be due to natural variability or possibly from the increased efficiency of fish predation due to the slight increase in water clarity. Crayfish trapping did not occur on Lake Metonga in 2003.

At this time, there are no obvious effects of zebra mussels on the fish community of Lake Metonga. Although not statistically significant, age-0 yellow perch condition appears to be reduced from 2002-2003. Again, this is a predicted effect of zebra mussels. Because yellow perch rely on plankton during their early-life, plankton reductions may cause poor growth and condition. This could also be true for walleye, but little natural walleye reproduction takes place on Lake Metonga, and most walleye are stocked in the summer at >1.5", when they've already switched to other foods such as small fish and invertebrates.

Lake Metonga contains habitat similar to other lakes that have high zebra mussel densities. There is suitable substrate, ample food (phytoplankton), and sufficient calcium levels for growth and reproduction. The U.S. Army Corp of Engineers has identified five physical and chemical parameters that influence the likelihood of high zebra mussel infestation. They are listed in Table 1 and are compared to levels found in Lake Metonga. Water temperature, pH, salinity, and dissolved oxygen levels are within guidelines for

high densities. Although Lake Metonga calcium levels are well below guidelines, calcium levels as low as 8 - 12 mg/L have been shown in the literature to support high zebra mussel densities.

Zebra mussels have been found in Lake Metonga in depths up to 10 m on gravel, cobble, and boulders, sticks and logs, native mussels and crayfish, and man-made substrates such as boat docks and boats/motors. Furthermore, they have been found on submerged aquatic plants. It's common to find aquatic plants with attached zebra mussels washed up on shore. A combination of quality habitat and prolific reproduction (one mature female can produce up to 200,000 eggs per year) may lead to high densities in Lake Metonga.

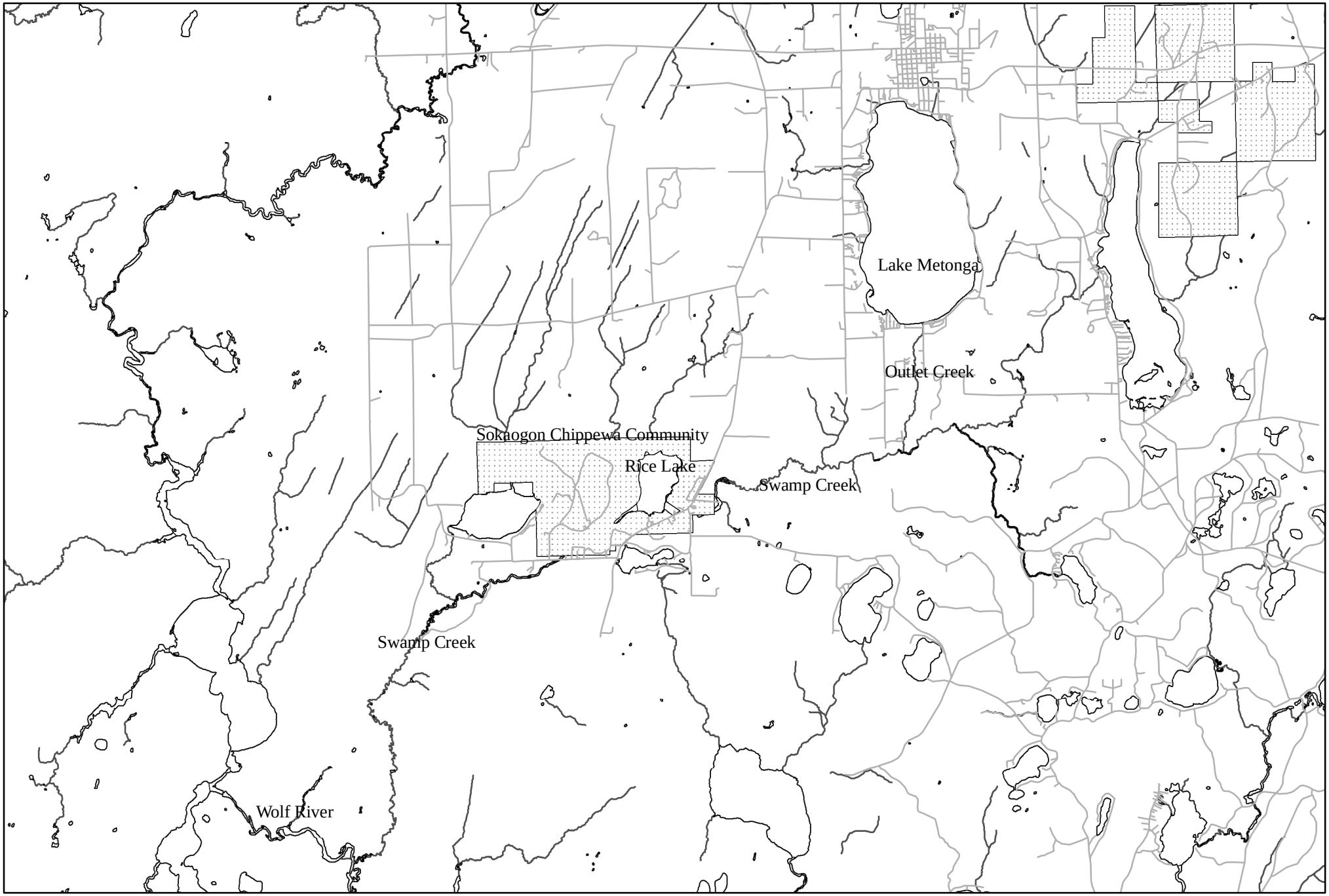
Table 1. Chemical and physical values for high risk of zebra mussel infestation with a comparison to levels found in Lake Metonga. The U.S. Army Corp of Engineers developed guidelines.

	High Risk of Infestation	Lake Metonga Levels
pH	7.4 – 8.9	7.3 - 8.4
Dissolved oxygen	> 8.0 mg/L	> 8.0 mg/L
Calcium	>55 mg/L	23 mg/L
Temperature (reproduction)	>12 ^{o}C	>12 ^{o}C
Number of Months above 12 ^{o}C	4	>4
Salinity	0 – 1	0 – 1

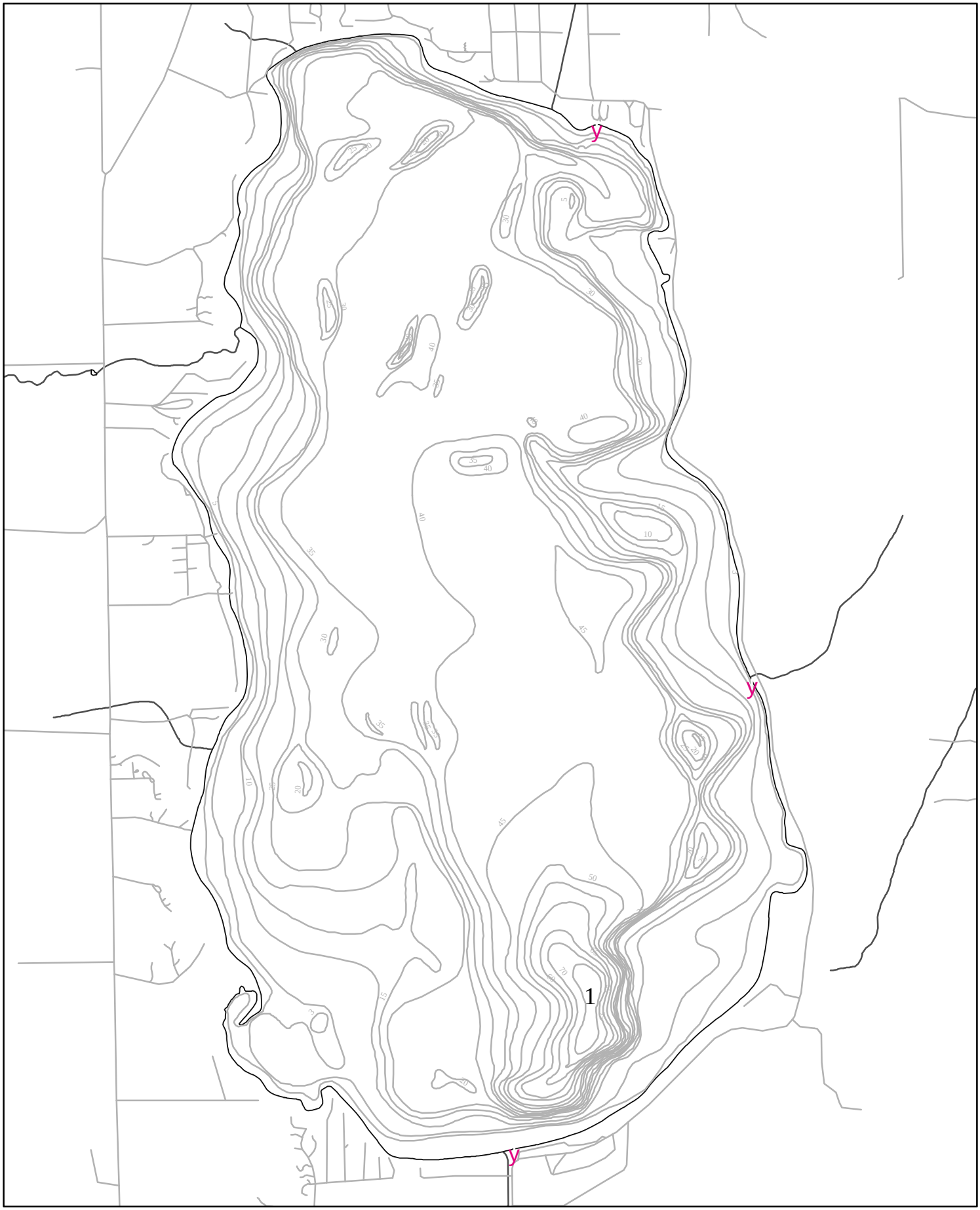
Although zebra mussels are currently found at low densities in Lake Metonga, it appears that conditions are favorable for survival, reproduction, and establishment of higher densities. Little is known about the effects of zebra mussels on inland lakes, particularly small inland lakes. Much research has been reported on the Great Lakes; however, it is difficult to predict zebra mussel densities and effects from Great Lakes studies because of differences in scale and ecosystem complexity. Therefore, the Tribe will continue the long-term monitoring program established in 2002. It is imperative that a baseline of pre-impact conditions be established before zebra mussels become established at high densities.

Long-term results of this study will be used to help manage the Lake Metonga ecosystem, with an emphasis on protecting the fishery. It is predicted that as the zebra population increases that effects on shorter-generation organisms such as plankton will be seen in 2-3 years with effects on longer-generation organisms such as fish taking 5-10 years.

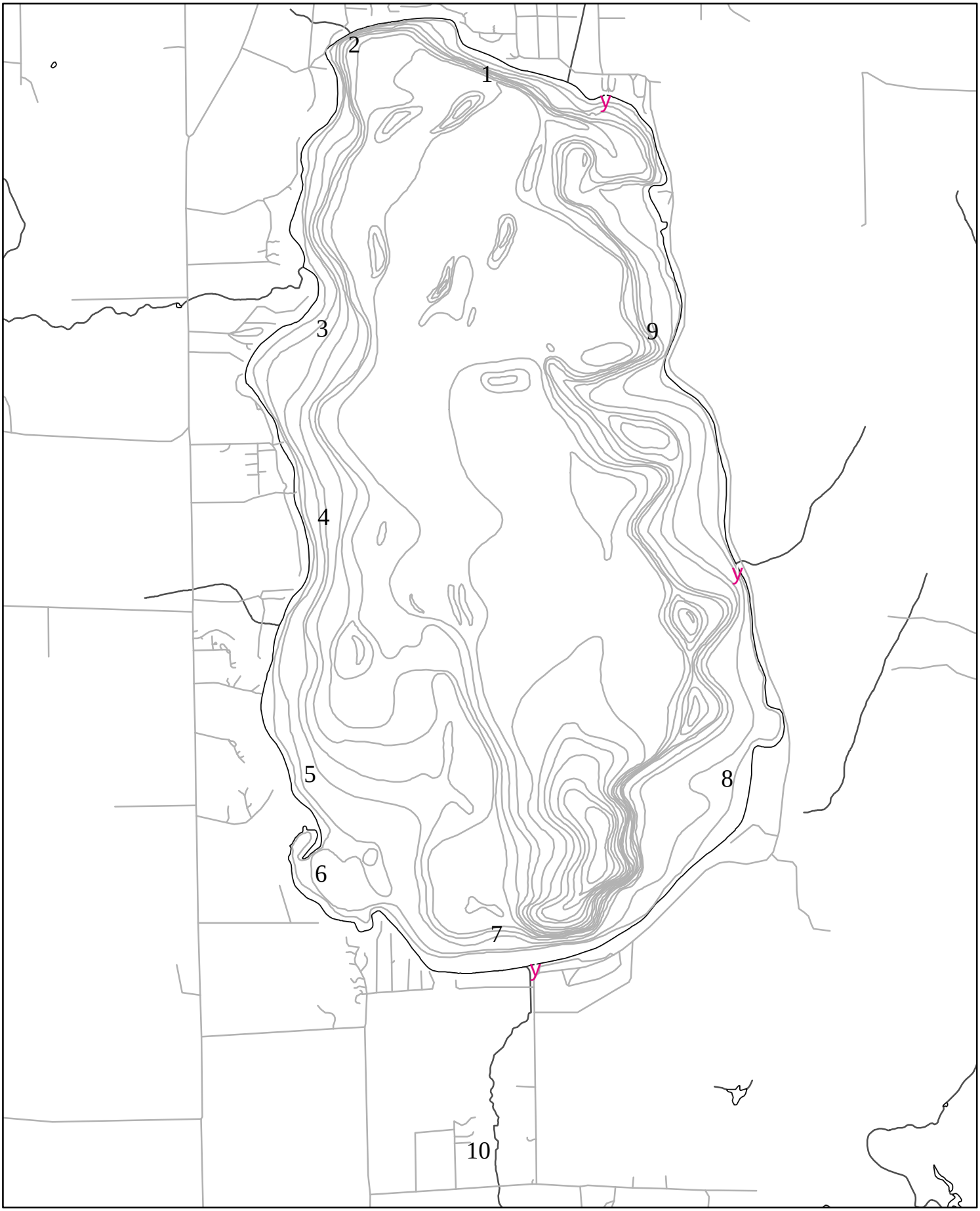
It is likely that zebra mussels will be introduced into other lakes in northern Wisconsin. Long-term results from this study may be used to help predict the impacts of zebra mussels on these lakes or offer management strategies. However, all lakes are unique and could respond differently to zebra mussels; similar projects could be established on lakes to provide additional information on the effects of zebra mussels. In addition, results from this project may point out a few sensitive endpoints that could be monitored on other lakes, resulting in reduced project costs.



Map 1. Relative location of Lake Metonga and outlet stream to the Sokaogon Chippewa Community, Rice Lake , and the Wolf River.



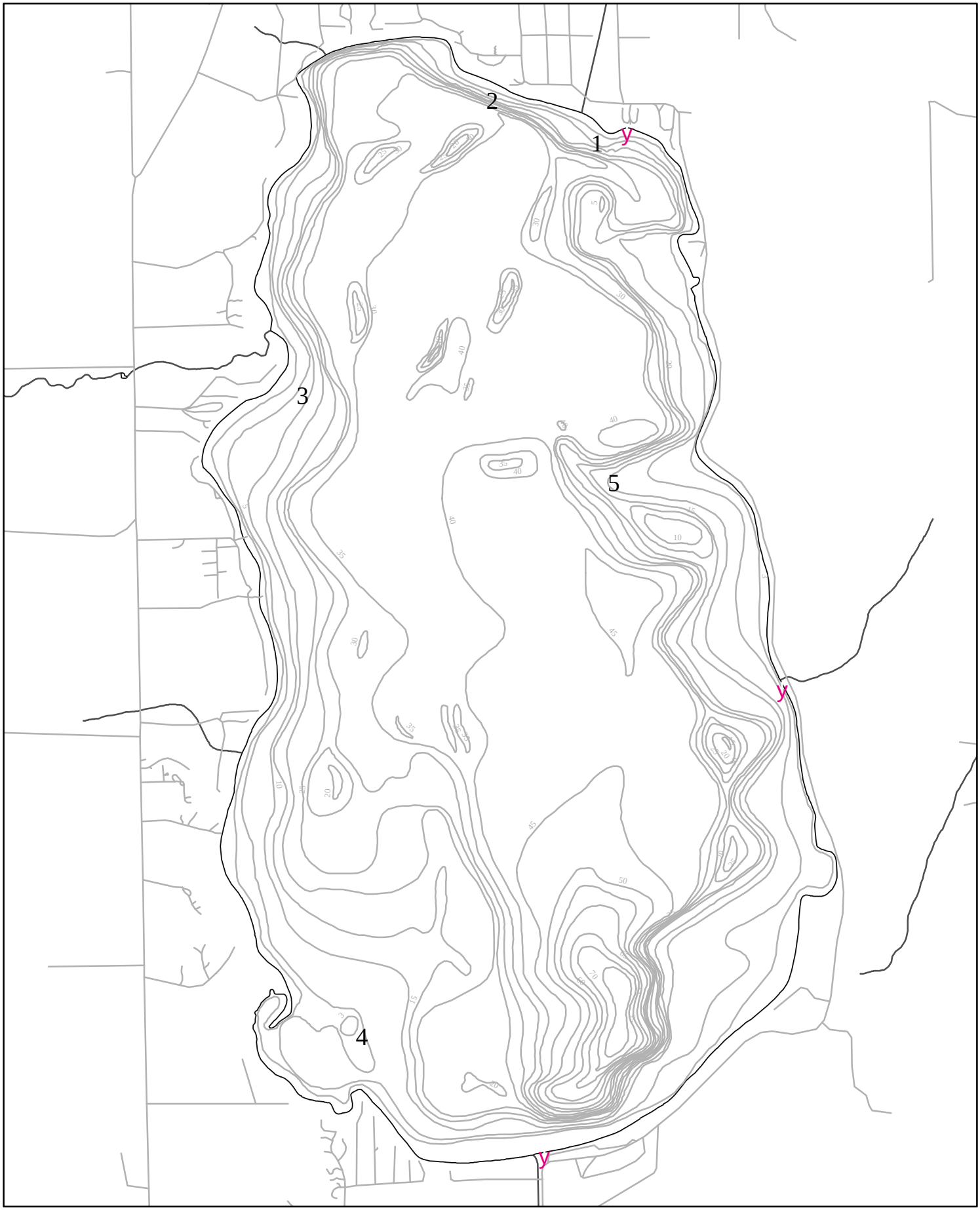
Map 2. Lake Metonga biweekly sampling site, 2003.
1 = Deep Hole Site



Map 3. Lake Metonga, Outlet Creek juvenile zebra mussel sampling sites, 2003.

1

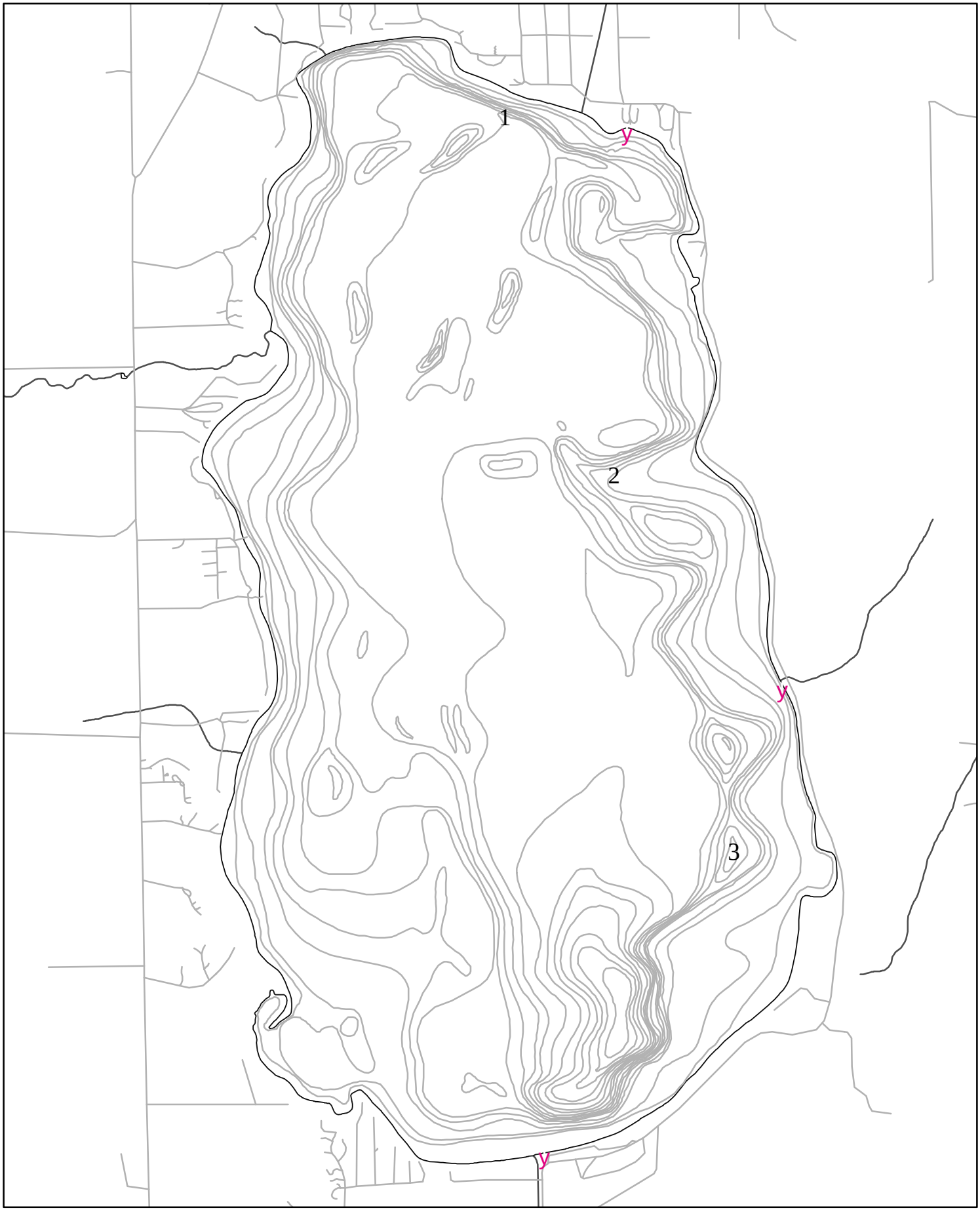
Miles



Map 4. Lake Metonga adult zebra mussel density survey sites, 2003.

1

Miles



Map 5. Zebra mussel veliger survey sites, 2003.

1
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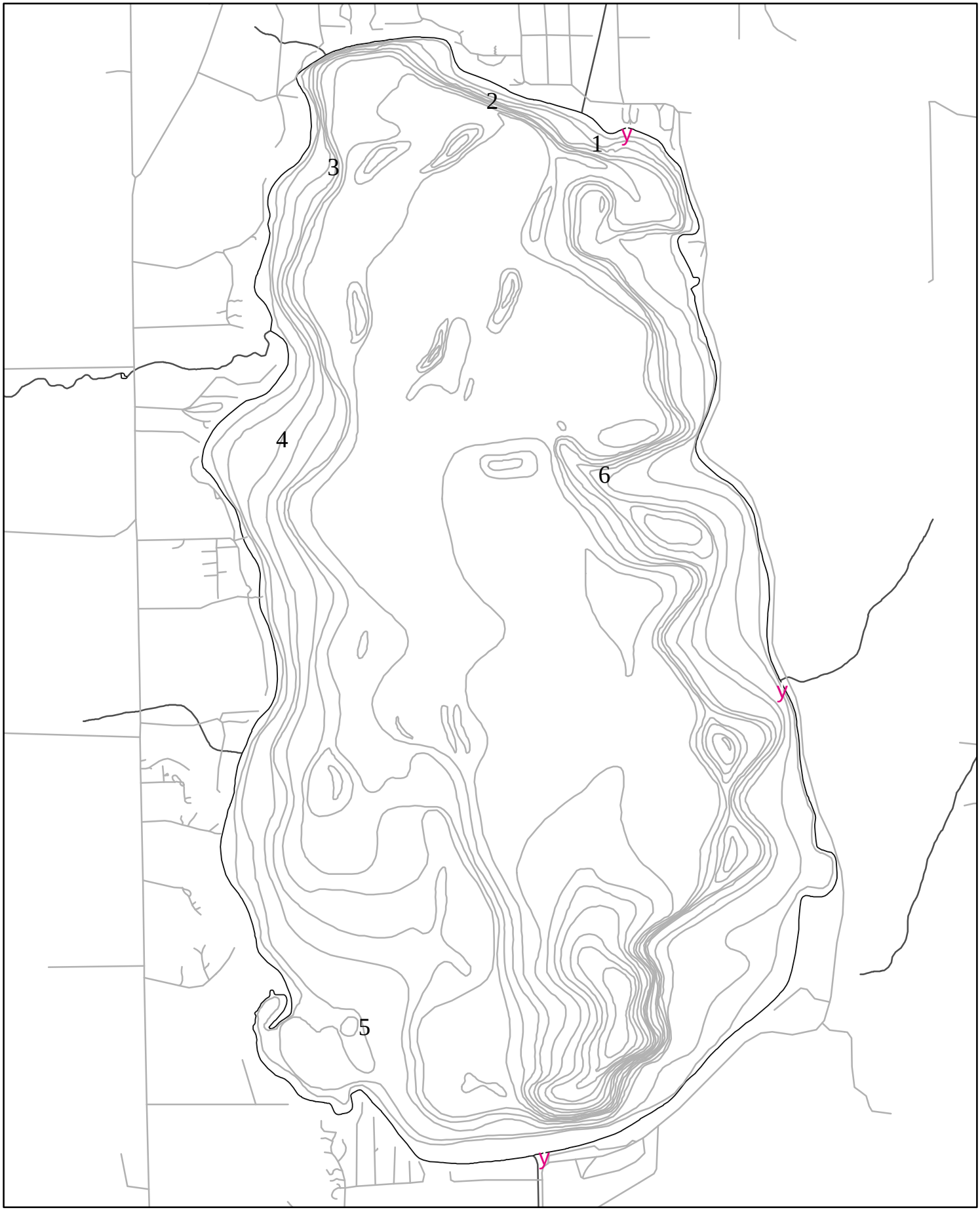

Map 6. Lake Metonga crayfish survey sites, 2003.

1
Miles

Parameter Date	Nitrogen (mg/L)	Phosphorus (mg/L)	Chl a (ug/L)	Pheophytin (ug/L)	Calcium (mg/L)	Hardness (mg/L)	Alkalinity (mg/L)	Sechi Depth (ft)
5/8/2003	0.4	0.012	4	<1	22	95	97	19
5/22/2003	0.7	0.020	4	<1				16
6/6/2003	0.4	0.013	1	<1				24
6/16/2003	0.4	0.010	1	<1				24
6/30/2003			2	<1				17.5
7/18/2003	0.3	0.009	2	<1	23.9	109	97	21.5
7/30/2003	0.4	0.014	4	<1				16.5
8/13/2003	0.6	0.020	1	<1				16
8/27/2003	0.6	0.012	2	<1				22.5
9/12/2003	0.5	0.016	2	<1				21
9/28/2003	0.45	0.033	3.5	1.5	22.5	102.5	97	16
10/13/2003	0.4	0.035	12	<1				15.5
10/24/2003	0.4	0.026	11	<1				15
AVG	0.46	0.018	3.8	<1	22.8	102.2	97	18.8
2002 AVG	0.38	0.019	4.9	<1	23.7	96.3	93	17.5
2003 AVG	0.46	0.018	3.8	<1	22.8	102.2	97	18.8

Depth	Temp	DO	DO%	pH
0	48.01	12.06	104.0	8.20
3	47.96	12.02	103.7	8.20
6	47.96	12.01	103.7	8.20
9	47.89	11.99	103.4	8.19
12	47.80	11.98	103.2	8.19
15	47.78	11.98	103.1	8.19
18	47.81	11.98	103.3	8.19
21	47.70	12.01	103.2	8.19
24	47.53	12.01	103.0	8.19
27	47.53	12.00	102.9	8.19
30	47.50	11.97	102.6	8.18
33	47.47	11.95	102.5	8.18
36	47.43	11.93	102.2	8.18
39	47.30	11.88	101.4	8.16
42	47.24	11.84	101.1	8.15
45	46.80	11.73	99.6	8.11
48	46.12	11.50	97.1	8.03
51	45.72	11.36	95.0	7.98
54	45.58	11.38	95.2	7.98
57	45.55	11.45	95.7	7.99
60	45.55	11.46	95.8	7.99
63	45.47	11.38	95.2	7.99
66	45.46	11.30	94.4	7.99
69	45.43	11.23	93.6	7.96
72	45.41	11.22	93.5	7.96
75	45.31	10.68	87.4	7.87
78	45.12	1.04	5.7	7.28

Depth	Temp	DO	DO%	pH
0	52.70	11.45	105.2	8.39
3	52.66	11.46	105.1	8.41
6	52.59	11.47	105.2	8.42
9	52.35	11.52	105.4	8.44
12	52.07	11.47	104.5	8.44
15	51.99	11.48	104.4	8.44
18	51.89	11.44	103.6	8.45
21	51.80	11.20	101.5	8.43
24	51.68	11.09	100.3	8.37
27	51.58	11.03	99.6	8.35
30	51.48	10.92	98.4	8.34
33	51.42	10.87	98.2	8.34
36	51.34	10.91	98.1	8.34
39	50.94	10.68	96.3	8.26
42	50.75	10.53	94.1	8.21
45	50.61	10.45	93.1	8.17
48	50.41	10.31	91.6	8.13
51	50.32	10.23	90.8	8.11
54	50.27	10.14	90.1	8.09
57	50.16	9.99	88.5	8.06
60	50.11	9.89	87.7	8.05
63	50.07	9.82	87.1	8.04
66	50.05	9.81	87.0	8.03
69	50.04	9.84	87.1	8.03
72	49.93	9.81	87.1	8.02
75	49.89	9.71	86.0	8.00
78	49.88	9.63	85.1	7.98
81	49.57	5.39	50.0	7.50

Depth	Temp	DO	DO%	pH
0	62.88	10.15	105.4	8.44
3	62.85	10.16	105.5	8.44
6	61.57	10.30	105.6	8.46
9	59.57	10.39	105.8	8.48
12	59.36	10.53	105.6	8.52
15	58.85	10.10	104.9	8.53
18	58.10	10.67	105.0	8.53
21	57.44	10.65	103.7	8.52
24	56.66	10.64	102.7	8.52
27	56.38	10.60	101.9	8.51
30	56.17	10.53	100.4	8.47
33	55.84	10.39	98.9	8.41
36	55.27	9.89	94.5	8.32
39	54.94	9.62	91.3	8.21
42	54.64	9.27	86.5	8.13
45	54.15	8.48	77.6	8.02
48	53.91	8.04	73.7	7.94
51	53.86	7.53	69.9	7.90
54	53.83	7.43	69.2	7.88
57	53.78	7.46	69.4	7.88
60	53.70	7.51	69.7	7.86
63	53.70	7.50	69.7	7.86
66	53.64	7.38	69.1	7.84
69	53.53	7.24	64.9	7.80
72	53.48	6.79	62.7	7.77
75	53.37	6.55	60.6	7.74
78	52.98	5.58	50.3	7.65
81	52.74	0.32	2.9	7.52

Depth	Temp	DO	DO%	pH
0	69.39	9.33	104.3	8.40
3	66.67	9.65	104.5	8.42
6	64.45	9.92	105.0	8.44
9	64.23	9.96	105.0	8.44
12	63.71	9.95	104.3	8.42
15	63.08	9.96	103.7	8.41
18	62.50	10.01	103.3	8.42
21	61.33	10.04	102.6	8.41
24	60.32	9.84	98.8	8.34
27	59.14	9.55	95.1	8.24
28	57.95	9.47	92.6	8.19
29	57.02	9.34	90.5	8.13
30	56.53	9.29	89.2	8.12
31	56.22	9.00	86.4	8.06
32	55.97	8.81	83.6	8.00
33	55.68	8.15	78.4	7.94
36	55.31	7.74	72.1	7.84
39	55.18	7.25	68.0	7.81
42	54.87	6.72	64.2	7.75
45	54.66	6.39	59.8	7.72
48	54.47	6.18	58.4	7.70
51	54.37	6.09	57.0	7.69
54	54.16	6.01	54.9	7.64
57	54.02	5.39	50.7	7.63
60	53.86	5.20	47.8	7.59
63	53.75	4.84	45.0	7.57
66	53.55	4.45	42.0	7.56
69	53.44	4.05	39.0	7.53
72	53.37	3.73	33.8	7.50
75	53.26	3.22	28.1	7.48
78	53.15	2.52	22.4	7.45
81	53.03	1.30	12.0	7.37

Depth	Temp	DO	DO%	pH
0	70.66	9.15	103.6	8.53
3	70.42	9.16	103.8	8.55
6	70.04	9.24	104.1	8.57
9	69.56	9.33	104.4	8.59
12	67.67	9.41	103.1	8.60
15	67.39	9.41	102.8	8.60
18	67.21	9.35	102.2	8.59
21	66.80	9.26	100.5	8.57
22	65.44	9.38	100.4	8.46
23	63.90	9.65	101.4	8.37
24	61.38	10.17	104.7	8.36
25	61.25	9.87	100.0	8.26
26	60.40	9.70	97.7	8.23
27	59.87	9.42	94.1	8.15
28	58.88	8.52	84.3	8.03
29	58.10	7.80	77.1	7.83
30	57.46	7.12	71.4	7.74
31	57.29	6.73	65.5	7.71
32	57.12	6.54	63.4	7.68
33	56.87	6.87	66.3	7.68
36	56.37	6.52	62.5	7.65
39	56.04	6.01	57.5	7.60
42	55.01	4.63	44.1	7.53
45	55.17	4.61	43.4	7.50
48	54.57	3.23	30.6	7.44
51	54.23	2.93	27.8	7.40
54	54.10	2.54	23.5	7.38
57	53.94	1.98	18.4	7.35
60	53.79	1.80	16.7	7.34
63	53.65	1.50	13.7	7.33
66	53.56	1.22	11.2	7.32
69	53.50	0.97	8.7	7.31
72	53.46	0.81	7.5	7.31
75	53.46	0.72	6.8	7.30
78	53.39	0.65	5.6	7.30
81	53.18	0.36	3.0	7.22

Depth	Temp	DO	DO%	pH
0	73.51	8.85	103.2	8.62
3	72.13	8.94	103.0	8.64
6	70.80	9.05	102.7	8.65
9	70.69	9.06	102.7	8.66
12	70.55	9.06	102.6	8.66
15	70.45	9.07	102.6	8.66
18	70.34	9.09	102.4	8.67
21	70.18	9.09	102.5	8.67
24	69.51	8.96	100.6	8.65
25	68.56	8.73	97.4	8.57
26	65.14	7.54	81.5	8.14
27	62.07	6.30	65.1	7.72
28	60.89	5.71	58.5	7.63
29	59.62	5.10	51.5	7.61
30	59.16	4.71	46.8	7.58
31	58.52	4.28	41.4	7.55
32	58.22	3.72	36.6	7.52
33	57.76	3.60	34.9	7.52
36	57.21	3.31	32.5	7.50
39	56.84	2.85	28.4	7.47
42	56.26	1.32	12.9	7.42
45	55.68	1.16	11.1	7.40
48	54.96	0.42	3.7	7.38
51	54.52	0.16	1.4	7.37
54	54.26	0.08	0.7	7.37
57	54.18	0.07	0.7	7.38
60	53.85	0.07	0.7	7.37
63	53.70	0.07	0.6	7.41
66	53.63	0.07	0.7	7.42
69	53.55	0.06	0.5	7.43
72	53.50	0.06	0.6	7.44
75	53.46	0.06	0.6	7.44
78	53.37	0.06	0.6	7.45
81	52.95	0.06	0.5	7.32

Depth	Temp	DO	DO%	pH
0	72.24	9.29	107.1	8.75
3	72.25	9.28	106.9	8.76
6	72.21	9.24	106.2	8.75
9	72.05	9.03	103.8	8.72
12	71.43	9.03	103.1	8.69
15	71.16	9.20	104.5	8.71
18	70.90	8.93	101.6	8.67
21	70.46	8.69	98.1	8.62
24	69.99	8.31	93.6	8.54
27	69.18	7.82	87.2	8.41
28	68.57	7.32	81.3	8.26
29	63.57	2.64	27.5	7.46
30	62.76	2.02	20.9	7.41
31	62.77	2.00	20.8	7.40
32	61.52	1.05	10.7	7.34
33	60.80	0.63	6.4	7.32
34	60.35	0.54	5.4	7.31
35	60.16	0.48	4.9	7.31
36	60.02	0.47	4.7	7.31
37	59.03	0.06	0.6	7.28
38	58.44	0.07	0.7	7.29
39	57.94	0.07	0.7	7.30
42	56.98	0.05	0.5	7.30
45	54.88	0.06	0.6	7.35
48	54.44	0.05	0.4	7.38
51	54.18	0.05	0.5	7.41
54	54.07	0.05	0.5	7.41
57	53.78	0.04	0.4	7.41
60	53.68	0.04	0.4	7.41
63	53.61	0.04	0.4	7.42
66	53.50	0.04	0.4	7.42
69	53.43	0.04	0.4	7.42
72	53.35	0.04	0.4	7.43
75	53.32	0.04	0.4	7.43
78	53.29	0.03	0.3	7.43
81	53.09	0.04	0.4	7.24

Depth	Temp	DO	DO%	pH
0	76.10	9.02	108.3	8.61
3	75.12	8.90	105.9	8.62
6	72.88	9.18	106.4	8.66
9	72.35	9.08	104.7	8.69
12	72.10	9.08	104.4	8.69
15	71.63	8.83	101.1	8.65
18	71.51	8.85	101.2	8.66
21	71.28	8.52	97.1	8.60
24	70.78	7.74	88.0	8.45
27	70.13	6.91	77.7	8.24
28	69.65	6.35	71.1	8.08
29	69.02	5.14	57.3	7.82
30	67.80	3.75	41.1	7.57
31	67.44	3.19	34.7	7.49
32	66.74	2.48	26.9	7.42
33	63.05	0.12	1.2	7.21
34	60.02	0.10	1.0	7.21
35	58.40	0.10	0.9	7.21
36	58.08	0.08	0.8	7.21
39	57.29	0.08	0.8	7.22
42	56.82	0.08	0.7	7.23
45	55.43	0.08	0.8	7.25
48	54.93	0.08	0.7	7.26
51	54.53	0.08	0.7	7.27
54	54.25	0.08	0.7	7.28
57	54.08	0.07	0.7	7.28
60	53.89	0.07	0.7	7.28
63	53.67	0.07	0.7	7.28
66	53.43	0.07	0.6	7.28
69	53.27	0.06	0.6	7.28
72	53.21	0.06	0.6	7.28
75	53.18	0.06	0.6	7.28
78	52.88	0.06	0.7	6.90
81	52.84	0.08	0.7	6.88

Depth	Temp	DO	DO%	pH
0	74.45	8.19	96.7	8.66
3	74.41	8.18	96.5	8.66
6	74.42	8.19	96.6	8.66
9	74.29	8.18	96.5	8.66
12	74.16	8.20	96.4	8.66
15	74.07	8.26	96.6	8.68
18	73.96	8.18	96.9	8.65
21	73.92	8.11	95.1	8.65
24	73.82	8.13	95.5	8.67
25	73.56	8.22	97.3	8.69
26	72.79	8.02	92.4	8.59
27	71.20	6.40	72.0	8.29
28	70.51	5.54	61.3	7.59
29	70.02	4.70	52.3	7.82
30	69.11	3.75	41.1	7.68
31	67.81	1.98	22.3	7.49
32	66.70	1.02	11.1	7.38
33	65.65	0.58	6.1	7.32
34	64.51	0.43	4.6	7.29
35	63.00	0.27	2.8	7.24
36	61.02	0.19	1.9	7.22
37	59.39	0.18	1.7	7.20
38	58.67	0.17	1.7	7.20
39	58.27	0.17	1.6	7.24
40	58.00	0.16	1.6	7.26
41	57.74	0.16	1.5	7.26
42	57.38	0.16	1.6	7.26
45	56.55	0.16	1.5	7.27
48	55.13	0.16	1.6	7.27
51	54.51	0.16	1.5	7.28
54	54.21	0.15	1.4	7.27
57	54.08	0.16	1.5	7.27
60	53.86	0.15	1.4	7.27
63	53.79	0.15	1.4	7.27
66	53.70	0.15	1.3	7.27
69	53.53	0.14	1.3	7.27
72	53.39	0.14	1.3	7.26
75	53.27	0.14	1.2	7.25
78	53.25	0.13	1.2	7.25
81	53.23	0.13	1.2	7.25

Depth	Temp	DO	DO%	pH
0	68.52	7.76	85.9	8.30
3	68.51	7.77	86.0	8.30
6	68.51	7.76	85.8	8.30
9	68.52	7.74	85.7	8.30
12	68.51	7.72	85.5	8.30
15	68.41	7.73	85.4	8.31
18	68.33	7.74	85.4	8.30
21	68.09	7.61	84.5	8.27
24	67.61	5.80	61.3	7.89
25	67.63	5.23	58.9	7.82
26	67.44	5.01	54.0	7.76
27	67.40	4.74	51.7	7.75
28	67.20	4.35	47.4	7.68
29	66.38	3.00	32.4	7.51
30	65.66	1.66	19.2	7.44
31	65.54	1.38	13.7	7.38
32	65.37	0.87	8.9	7.36
33	65.11	0.63	1.7	7.33
34	64.52	0.24	2.4	7.28
35	62.94	0.18	1.9	7.27
36	64.83	0.33	3.7	7.29
37	62.01	0.16	1.6	7.23
38	61.44	0.15	1.6	7.22
39	62.60	0.17	1.7	7.25
40	60.81	0.15	1.5	7.18
41	60.33	0.15	1.5	7.17
42	59.55	0.14	1.5	7.17
43	58.88	0.14	1.4	7.17
44	58.32	0.14	1.4	7.21
45	58.23	0.14	1.4	7.22
48	56.79	0.14	1.4	7.23
51	56.20	0.14	1.4	7.25
54	54.71	0.15	1.4	7.26
57	54.07	0.14	1.3	7.24
60	53.77	0.14	1.3	7.23
63	53.53	0.14	1.3	7.23
66	53.41	0.14	1.3	7.23
69	53.30	0.13	1.2	7.24
72	53.26	0.13	1.2	7.24
75	53.21	0.13	1.2	7.25
78	53.19	0.12	1.1	7.25
81	53.19	0.12	1.1	7.26

Depth	Temp	DO	DO%	pH
0	58.71	9.25	90.3	8.17
3	58.81	8.70	86.4	8.16
6	58.81	8.60	85.3	8.14
9	58.82	8.58	85.0	8.15
12	58.82	8.57	84.8	8.15
15	58.82	8.57	84.8	8.14
18	58.83	8.57	84.8	8.14
21	58.83	8.57	84.9	8.14
24	58.81	8.57	84.9	8.14
27	58.80	8.60	85.1	8.15
30	58.81	8.60	85.1	8.14
33	58.76	8.60	85.1	8.15
36	58.75	8.61	85.2	8.15
39	58.77	8.61	85.2	8.14
42	58.69	8.61	85.2	8.14
45	58.74	8.63	85.3	8.16
48	58.66	8.63	85.4	8.15
51	58.67	8.65	85.5	8.15
54	58.63	8.67	85.5	8.14
57	57.80	7.92	78.1	7.90
60	57.57	7.75	73.4	7.82
63	57.44	7.39	72.7	7.79
66	57.10	7.15	68.5	7.74
69	57.17	7.94	68.3	7.70
72	56.23	6.46	59.9	7.60
75	56.03	5.43	51.0	7.52
78	53.56	0.99	9.2	7.09

Depth	Temp	DO	DO%	pH
0	54.60	10.70	100.8	8.31
3	54.61	10.66	100.2	8.32
6	54.58	10.63	99.7	8.32
9	54.56	10.63	99.8	8.33
12	54.54	10.62	99.7	8.33
15	54.46	10.58	99.2	8.32
18	54.47	10.56	99.2	8.32
21	54.46	10.56	99.1	8.32
24	54.46	10.52	98.7	8.32
27	54.45	10.52	98.7	8.32
30	54.45	10.51	98.7	8.32
33	54.45	10.51	98.7	8.32
36	54.45	10.50	98.6	8.33
39	54.45	10.51	98.5	8.34
42	54.45	10.50	98.6	8.33
45	54.46	10.51	98.5	8.33
48	54.45	10.51	98.6	8.33
51	54.45	10.50	98.6	8.33
54	54.45	10.50	98.5	8.34
57	54.41	10.51	98.5	8.31
60	54.01	10.42	96.2	8.18
63	53.82	9.82	90.9	8.12
66	53.75	9.64	89.4	8.09
69	53.75	9.42	87.5	8.06
72	53.59	9.21	85.3	8.03
75	53.53	8.18	83.4	8.01
78	53.38	6.65	66.7	7.80

Depth	Temp	DO	DO%	pH
0	50.58	10.68	95.4	8.43
3	50.59	10.67	95.4	8.43
6	50.59	10.67	95.3	8.43
9	50.59	10.65	95.2	8.43
12	50.60	10.66	95.2	8.43
15	50.60	10.65	95.2	8.43
18	50.60	10.66	95.1	8.42
21	50.60	10.66	95.2	8.42
24	50.60	10.64	95.1	8.42
27	50.60	10.62	94.9	8.42
30	50.61	10.60	94.7	8.42
33	50.60	10.62	94.7	8.42
36	50.58	10.60	94.7	8.41
39	50.54	10.59	94.6	8.41
42	50.53	10.57	94.4	8.40
45	50.54	10.57	94.3	8.40
48	50.52	10.54	94.1	8.40
51	50.50	10.52	93.8	8.40
54	50.49	10.49	93.5	8.39
57	50.49	10.49	93.3	8.39
60	50.49	10.45	93.1	8.39
63	50.46	10.45	93.1	8.38
66	50.44	10.43	93.1	8.38
69	50.12	10.43	93.0	8.38
72	50.37	10.43	92.8	8.36
75	50.12	10.36	92.1	8.34
78	50.11	0.11	1.0	8.41

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2003

Date		5/8/2003	5/8/2003	5/8/2003	5/21/2003	6/6/2003	6/6/2003	6/6/2003	6/16/2003
		#1	#2	#3		#1	#2	#3	
	Unit								
CYANOPHYTA (blue-green algae)									
Anabaena catenula var. affinis	filament								
Anabaena flos-aquae	filament							8	34
Anabaena fusca	filament								
Anabaena mendotae	filament								
Anabaena perturbata	filament								
Anabaena sp.	filament								
Aphanizomenon flos-aquae	filament		37.5						
Aphanocapsa conferta	colony								
Aphanocapsa delicatissima	colony								
Aphanocapsa incerta	colony								
Aphanothece clathrata	colony					5250	5000	3750	
Aphanothece minutissima	colony		250	187.5	1250	5000	15000	9625	48375
Aphanothece smithii	colony								
Chroococcus dispersus	colony								
Chroococcus limneticus	colony					10			14
Chroococcus prescottii	colony								
Chroococcus sp.	colony								
Coelomoron sp.	colony								
Coelosphaerium aerugineum	colony								
Cyanobium sp.	unicell								
Gloeotricha echinulata	colony								
Lyngbya birgei	filament								
Lyngbya limnetica	filament	16							
Merismopedia tenuissima	colony								
Merismopedia trolleri	colony								
Microcystis flos-aquae	colony								
Microcystis smithii	colony								
Myxobaktron sp.	unicell		10	5					2
Oscillatoria agardhii	filament								
Oscillatoria curviceps	filament								
Oscillatoria limnetica	filament			14			36		
Oscillatoria sp. 1	filament								
Oscillatoria sp. 2	filament								

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Phytoplankton Data - Density Metric
2003

Date		5/8/2003	5/8/2003	5/8/2003	5/21/2003	6/6/2003	6/6/2003	6/6/2003	6/16/2003
		#1	#2	#3		#1	#2	#3	
	Unit								
Rhabdogloea sp.	colony								
Synechococcus sigmoideus	unicell								
Synechocystis sp.	unicell								
Trichodesmium lacustre	filament								
Woronichinia compacta	colony								60
CHRYSOPHYTA (golden-brown algae)									
Bicosoeca ruttneri	unicell								
Chromulina sp. 1	unicell	250	187.5	375	1562.5	875	150	1562.5	62.5
Chromulina sp. 2	unicell								
Chrysocapsa planctonica	colony					55			136
Chrysococcus sp.	unicell								
Chrysolykos planctonicus	unicell								
Chrysolykos skujae	unicell	20		20					
Chrysosphaerella longispina	colony		7.5				20	10	
Dinobryon bavaricum	colony			5					
Dinobryon cylindricum	colony	32.5	67.5	25					
Dinobryon divergens	colony	137.5	175	275	1650	27.5	50	125	
Dinobryon sociale var. americanum	colony			32.5					
Dinobryon sp.	unicell								
Epipyxis sp.	unicell								
Kephyrion boreale	unicell								
Kephyrion planctonicum	unicell								
Kephryion skujae	unicell		10						
Mallomonas akrokomos	unicell								
Mallomonas sp.	unicell					2		1	
Ochromonas sp.	unicell								
Salpingoeca sp.	unicell								
statospore of Chrysolykos	unicell								
statospore of Dinobryon	unicell								
Synura sp.	colony		180		1540	630	970	850	
XANTHOPHYTA (yellow-green algae)									
Centritractus sp.	unicell								6

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2003

Date		5/8/2003	5/8/2003	5/8/2003	5/21/2003	6/6/2003	6/6/2003	6/6/2003	6/16/2003
		#1	#2	#3		#1	#2	#3	
	Unit								
BACILLARIOPHYTA (diatoms)									
Asterionella formosa	colony	60	10	32.5	50				
Aulacoseira ambigua	filament								
Aulacoseira granulata var. angustissima	filament								6
Aulacoseira granulata var. granulata	filament								
Aulacoseira italica	filament	7.5							
Aulacoseira subarctica	filament				55	2	49	24	
Cymbella sp.	unicell								
Entomoneis ornata	unicell								
Fragilaria crotonensis	colony								
Fragilaria sp.	colony								
Navicula placentula	unicell								
Navicula radiosa	unicell								
Nitzschia acicularis	unicell	2.5	2.5	5					
Nitzschia gracilis	unicell								
Nitzschia linearis	unicell								
Nitzschia paleacea	colony	25		5				6	
Pinnularia maior	unicell								
Punticulata bodanica	unicell	5	5	12.5	27.5	40	25	34	61
Rhizosolenia longiseta	unicell								
Stephanodiscus niagarae	unicell	7.5	5	2.5	1		1		
Synedra acus	unicell								
Synedra cyclopum	unicell								3
Synedra delicatissima	unicell								
Synedra minuscula	colony								
Synedra rumpens var. familiaris	unicell								
Synedra sp.	unicell								
Tabellaria fenestrata	colony	5	17.5	20	15	37	15	20	
HAPTOPHYTA									
Chrysochromulina sp.	unicell	8340	9270	8650	80	60	100		
CRYPTOPHYTA									

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2003

Date		5/8/2003	5/8/2003	5/8/2003	5/21/2003	6/6/2003	6/6/2003	6/6/2003	6/16/2003
		#1	#2	#3		#1	#2	#3	
	Unit								
Campylomonas reflexa	unicell	27.5	32.5	37.5	32.5	12.5	10	11	29
Campylomonas reflexa	unicell	62.5	25	17.5	42.5	17.5	23	22	40
Cryptomonas erosa	unicell								
Cryptomonas ovata	unicell								
Cryptomonas rostratiformis	unicell	10	7.5	2.5	10	7.5	31	27	5
Cryptomonas sp.	unicell								
Hemiselmis sp.	unicell								
Komma caudata	unicell				80	70	50	210	
Plagioselmis nannoplanctica	unicell	430	680	830	300	110	210	100	630
DINOPHYTA (dinoflagellates)									
Ceratium hirundinella f. piburgense	unicell								
Glenodinium sp.	unicell								
Peridiniopsis edax	unicell								
Peridiniopsis kulczynskii	unicell								
Peridiniopsis sp.	unicell								
Peridiniopsis quadridens	unicell								
Peridinium sp.	unicell								
EUGLENOPHYTA									
Colacium vesiculosum	unicell				7.5				1
Euglena ehrenbergii	unicell								
Euglena sp.	unicell								
Euglena viridis	unicell								
Trachelomonas dybowskii	unicell								
Trachelomonas sp.	unicell								
Trachelomonas varians	unicell								
PRASINOPHYTA									
Pedinomonas sp.	unicell						60		
CHLOROPHYTA (green algae)									
Ankistrodesmus fusiformis									
Ankyra judayi	unicell	7.5	5	5		2	3	2	6

Lake Metonga - Deep Hole Site
Phytoplankton Data - Density Metric
2003

Date		5/8/2003	5/8/2003	5/8/2003	5/21/2003	6/6/2003	6/6/2003	6/6/2003	6/16/2003
		#1	#2	#3		#1	#2	#3	
	Unit								
Botryococcus sp.	colony								
Carteria sp.	unicell								
Chlamydocapsa ampla	colony								
Chlamydomonas globosa	unicell								10
Chlamydomonas sp.	unicell								
Chlorella minutissima	unicell	1875	3875	1625	312.5	3250	312.5	375	250
Chlorella vulgaris	unicell								
Chlorococcum sp.	unicell								
Choricystis sp.	unicell								
Closterium acutum var. variabile	unicell								
Coelastrum microporum	colony								
Coenochloris fottii	colony						18		76
Coenococcus planctonicus	colony								
Cosmarium bioculatum	unicell								
Cosmarium botrytis var. subtumidum	unicell								
Cosmarium depressum var. achondrum	unicell								
Cosmarium phaseolus f. minus	unicell								
Cosmarium trilobulatum	unicell								
Cosmarium tuddalense var. pachydermiforme	unicell								
Crucigeniella apiculata	colony								
Crucigeniella rectangularis	colony								
Dictysosphaerium sp.	colony								
Elakatothrix viridis	colony	2.5		5		1			
Eremosphaera sp.	colony								
Eudorina elegans	colony								
Keratococcus sp.	unicell								
Lagerheimia ciliata	unicell								
Monomastix sp.	unicell								
Monoraphidium minutum	unicell								
Mougeotia sp.	filament								
Nephrocytium limneticum	colony								
Oocystis lacustris	colony						7		
Oocystis parva	colony								
Oocystis sp.	colony								

Lake Metonga - Deep Hole Site
Phytoplankton Data - Density Metric
2003

Date		5/8/2003	5/8/2003	5/8/2003	5/21/2003	6/6/2003	6/6/2003	6/6/2003	6/16/2003
		#1	#2	#3		#1	#2	#3	
	Unit								
Oocystis submarina	colony								
Pandorina smithii	colony								
Pediastrum boryanum	colony				32	8			
Pediastrum tetras	colony								
Quadrioccus ellipticus	colony								
Scenedesmus bicaudatus	colony								
Scenedesmus communis	colony								
Scenedesmus ecornis	colony								
Scenedesmus sp.	colony								
Scenedesmus spinosus	colony								
Spondylosium planum	filament								
Staurastrum sp.	unicell								
Tetraedron minimum	unicell								
Tetraspora sp.	colony								
Volvox globator	colony								
TOTAL		11323.5	14860	12189	7048	15467	22140.5	16762.5	49806.5

Density=cells/mL

*10/13/03 bottle broken during shipping

Lake Metonga - Deep Hole Site
Phytoplankton Data - Density Metric
2003

Date		6/30/2003	6/30/2003	6/30/2003	7/18/2003	7/30/2003	7/30/2003	7/30/2003	8/14/2003
		#1	#2	#3		#1	#2	#3	
	Unit								
CYANOPHYTA (blue-green algae)									
Anabaena catenula var. affinis	filament								
Anabaena flos-aquae	filament	80	240	130		3.4	44	69.8	76.5
Anabaena fusca	filament								
Anabaena mendotae	filament								
Anabaena perturbata	filament				98		137.3	131.6	
Anabaena sp.	filament								
Aphanizomenon flos-aquae	filament	35				9			
Aphanocapsa conferta	colony								
Aphanocapsa delicatissima	colony								
Aphanocapsa incerta	colony								
Aphanothece clathrata	colony	20250	15625	14812.5			825.6		
Aphanothece minutissima	colony	51250	66000	58250	66563	36120	26316	31425	50000
Aphanothece smithii	colony								
Chroococcus dispersus	colony		280	3000		630	684	500	340
Chroococcus limneticus	colony	30	15	20	10	4.5	54	4.5	
Chroococcus prescottii	colony								
Chroococcus sp.	colony								
Coelomoron sp.	colony								
Coelosphaerium aerugineum	colony								
Cyanobium sp.	unicell								
Gloeotricha echinulata	colony								
Lyngbya birgei	filament					114.8	40		6.8
Lyngbya limnetica	filament					162			
Merismopedia tenuissima	colony								
Merismopedia trolleri	colony								
Microcystis flos-aquae	colony								
Microcystis smithii	colony								
Myxobaktron sp.	unicell								
Oscillatoria agardhii	filament								
Oscillatoria curviceps	filament								
Oscillatoria limnetica	filament			9					
Oscillatoria sp. 1	filament								
Oscillatoria sp. 2	filament								

Lake Metonga - Deep Hole Site
Phytoplankton Data - Density Metric
2003

Date		6/30/2003	6/30/2003	6/30/2003	7/18/2003	7/30/2003	7/30/2003	7/30/2003	8/14/2003
		#1	#2	#3		#1	#2	#3	
	Unit								
Rhabdogloea sp.	colony								
Synechococcus sigmoideus	unicell								
Synechocystis sp.	unicell								
Trichodesmium lacustre	filament								
Woronichinia compacta	colony		500				51.8		
CHRYSOPHYTA (golden-brown algae)									
Bicosoeca ruttneri	unicell								
Chromulina sp. 1	unicell	500	562.5	1000	562.5				
Chromulina sp. 2	unicell								
Chrysocapsa planctonica	colony	275	305	200					
Chrysococcus sp.	unicell								
Chrysolykos planctonicus	unicell								
Chrysolykos skujae	unicell			10					
Chrysosphaerella longispina	colony	2.5		30	235	15.8	6.8	74.3	
Dinobryon bavaricum	colony	20	32.5	10	22.5	14.6	33.8	2.3	
Dinobryon cylindricum	colony								
Dinobryon divergens	colony	10		15	57.5	20.3	50.6	16.9	1.4
Dinobryon sociale var. americanum	colony				37.5	33.8	22.5	36	1.8
Dinobryon sp.	unicell				30				
Epipyxis sp.	unicell								
Kephyrion boreale	unicell		125		10	27	54	9	
Kephyrion planctonicum	unicell								
Kephryion skujae	unicell		250	20	50	18	9	18	
Mallomonas akrokomos	unicell								
Mallomonas sp.	unicell								
Ochromonas sp.	unicell								
Salpingoeca sp.	unicell				6				
statospore of Chrysolykos	unicell								
statospore of Dinobryon	unicell								
Synura sp.	colony								
XANTHOPHYTA (yellow-green algae)									
Centritractus sp.	unicell								

Lake Metonga - Deep Hole Site
Phytoplankton Data - Density Metric
2003

Date		6/30/2003	6/30/2003	6/30/2003	7/18/2003	7/30/2003	7/30/2003	7/30/2003	8/14/2003
		#1	#2	#3		#1	#2	#3	
	Unit								
BACILLARIOPHYTA (diatoms)									
Asterionella formosa	colony		37.5	15					
Aulacoseira ambigua	filament								
Aulacoseira granulata var. angustissima	filament								
Aulacoseira granulata var. granulata	filament								
Aulacoseira italica	filament								
Aulacoseira subarctica	filament			7.5					
Cymbella sp.	unicell								
Entomoneis ornata	unicell								
Fragilaria crotonensis	colony							31.5	184.5
Fragilaria sp.	colony								
Navicula placentula	unicell								
Navicula radiosa	unicell								
Nitzschia acicularis	unicell								
Nitzschia gracilis	unicell								
Nitzschia linearis	unicell								
Nitzschia paleacea	colony								
Pinnularia maior	unicell								
Punticulata bodanica	unicell	70	102.5	65	15	4.5	10.1	4.5	
Rhizosolenia longiseta	unicell				17.5	9	15.8	11.3	
Stephanodiscus niagarae	unicell			1		1.1	1.1	1.1	
Synedra acus	unicell					1.1			
Synedra cyclopum	unicell								
Synedra delicatissima	unicell								
Synedra minuscula	colony	1	1			9	6.8	3.4	2.3
Synedra rumpens var. familiaris	unicell								
Synedra sp.	unicell								
Tabellaria fenestrata	colony		6				1.1	7.9	5.6
HAPTOPHYTA									
Chrysochromulina sp.	unicell	900	890	1200	1970	558	342	747	2320
CRYPTOPHYTA									

Lake Metonga - Deep Hole Site
Phytoplankton Data - Density Metric
2003

Date		6/30/2003	6/30/2003	6/30/2003	7/18/2003	7/30/2003	7/30/2003	7/30/2003	8/14/2003
		#1	#2	#3		#1	#2	#3	
	Unit								
Campylomonas reflexa	unicell						1.1		
Campylomonas reflexa	unicell	7.5	22.5	12.5	17.5	5.6	47.3	16.9	
Cryptomonas erosa	unicell								
Cryptomonas ovata	unicell					2.3	11.3		1.4
Cryptomonas rostratiformis	unicell							1.1	
Cryptomonas sp.	unicell								
Hemiselmis sp.	unicell								
Komma caudata	unicell					477	720	612	180
Plagioselmis nannoplanctica	unicell	300	460	510	380	45	135	10	79
DINOPHYTA (dinoflagellates)									
Ceratium hirundinella f. piburgense	unicell						1.1	0.5	0.5
Glenodinium sp.	unicell					1.1	1.1		
Peridiniopsis edax	unicell								
Peridiniopsis kulczynskii	unicell								
Peridiniopsis sp.	unicell								
Peridiniopsis quadridens	unicell								
Peridinium sp.	unicell	1	1			1.1			
EUGLENOPHYTA									
Colacium vesiculosum	unicell								
Euglena ehrenbergii	unicell								
Euglena sp.	unicell								
Euglena viridis	unicell								
Trachelomonas dybowskii	unicell								1.1
Trachelomonas sp.	unicell								
Trachelomonas varians	unicell						7.9		
PRASINOPHYTA									
Pedinomonas sp.	unicell								
CHLOROPHYTA (green algae)									
Ankistrodesmus fusiformis							1.1	2.3	1.1
Ankyra judayi	unicell		2.5	10	7.5		9	2.3	

Lake Metonga - Deep Hole Site
Phytoplankton Data - Density Metric
2003

Date		6/30/2003	6/30/2003	6/30/2003	7/18/2003	7/30/2003	7/30/2003	7/30/2003	8/14/2003
		#1	#2	#3		#1	#2	#3	
	Unit								
Botryococcus sp.	colony		28				40.5		
Carteria sp.	unicell								1.1
Chlamydocapsa ampla	colony								
Chlamydomonas globosa	unicell				10				
Chlamydomonas sp.	unicell								
Chlorella minutissima	unicell	375	187.5	187.5	187.5	25.8	25.8	25.8	125
Chlorella vulgaris	unicell								
Chlorococcum sp.	unicell								
Choricystis sp.	unicell								
Closterium acutum var. variabile	unicell								
Coelastrum microporum	colony								
Coenochloris fottii	colony		6	55	20		90	4.5	18
Coenococcus planctonicus	colony								
Cosmarium bioculatum	unicell								
Cosmarium botrytis var. subtumidum	unicell								
Cosmarium depressum var. achondrum	unicell								
Cosmarium phaseolus f. minus	unicell								
Cosmarium trilobulatum	unicell								
Cosmarium tuddalense var. pachydermiforme	unicell					1.1			
Crucigeniella apiculata	colony								
Crucigeniella rectangularis	colony					13.5			8
Dictysosphaerium sp.	colony								
Elakatothrix viridis	colony	22.5							
Eremosphaera sp.	colony								
Eudorina elegans	colony								
Keratococcus sp.	unicell								
Lagerheimia ciliata	unicell								
Monomastix sp.	unicell								
Monoraphidium minutum	unicell								
Mougeotia sp.	filament								
Nephrocytium limneticum	colony								
Oocystis lacustris	colony	25	20	10		4.5			
Oocystis parva	colony								4.5
Oocystis sp.	colony						45		

Lake Metonga - Deep Hole Site
Phytoplankton Data - Density Metric
2003

Date		6/30/2003	6/30/2003	6/30/2003	7/18/2003	7/30/2003	7/30/2003	7/30/2003	8/14/2003
		#1	#2	#3		#1	#2	#3	
	Unit								
Oocystis submarina	colony								
Pandorina smithii	colony	60	9						
Pediastrum boryanum	colony			8					16.2
Pediastrum tetras	colony				8		4		
Quadrioccus ellipticus	colony								
Scenedesmus bicaudatus	colony								
Scenedesmus communis	colony						4.5		
Scenedesmus ecornis	colony								
Scenedesmus sp.	colony								
Scenedesmus spinosus	colony								
Spondylosium planum	filament								
Staurastrum sp.	unicell								
Tetraedron minimum	unicell				1		9		
Tetraspora sp.	colony								
Volvox globator	colony								
TOTAL		74214.5	85708.5	79588	70316	38332.9	29860	33769.5	53374.8

Density=cells/mL

*10/13/03 bottle broken during shipping

Lake Metonga - Deep Hole Site
Phytoplankton Data - Density Metric
2003

Date		8/27/2003	8/27/2003	8/27/2003	9/12/2003	9/28/2003	9/28/2003	9/28/2003	10/13/2003*
		#1	#2	#3		#1	#2	#3	
	Unit								
CYANOPHYTA (blue-green algae)									
Anabaena catenula var. affinis	filament								
Anabaena flos-aquae	filament	180	18	8	16	74	6	8	
Anabaena fusca	filament								
Anabaena mendotae	filament								
Anabaena perturbata	filament		51			28		62	
Anabaena sp.	filament								
Aphanizomenon flos-aquae	filament				20	545	32	162	
Aphanocapsa conferta	colony								
Aphanocapsa delicatissima	colony							1125	
Aphanocapsa incerta	colony								
Aphanothece clathrata	colony				1625	1875			
Aphanothece minutissima	colony	40188	27500	57000	44375	1000			
Aphanothece smithii	colony								
Chroococcus dispersus	colony	396	434	234	125				
Chroococcus limneticus	colony	52	30	36	5	22			
Chroococcus prescottii	colony								
Chroococcus sp.	colony								
Coelomoron sp.	colony								
Coelosphaerium aerugineum	colony							54	
Cyanobium sp.	unicell				62.5		250	62.5	
Gloeotricha echinulata	colony								
Lyngbya birgei	filament								
Lyngbya limnetica	filament					6			
Merismopedia tenuissima	colony								
Merismopedia trolleri	colony								
Microcystis flos-aquae	colony						110		
Microcystis smithii	colony								
Myxobaktron sp.	unicell								
Oscillatoria agardhii	filament								
Oscillatoria curviceps	filament								
Oscillatoria limnetica	filament					18		18	
Oscillatoria sp. 1	filament								
Oscillatoria sp. 2	filament								

Lake Metonga - Deep Hole Site
Phytoplankton Data - Density Metric
2003

Date		8/27/2003	8/27/2003	8/27/2003	9/12/2003	9/28/2003	9/28/2003	9/28/2003	10/13/2003*
		#1	#2	#3		#1	#2	#3	
	Unit								
Rhabdogloea sp.	colony								
Synechococcus sigmoideus	unicell								
Synechocystis sp.	unicell								
Trichodesmium lacustre	filament								
Woronichinia compacta	colony			600	1250	50	130	400	
CHRYSOPHYTA (golden-brown algae)									
Bicosoeca ruttneri	unicell								
Chromulina sp. 1	unicell	250	250	312.5	437.5			312.5	
Chromulina sp. 2	unicell								
Chrysocapsa planctonica	colony								
Chrysococcus sp.	unicell								
Chrysolykos planctonicus	unicell								
Chrysolykos skujae	unicell								
Chrysosphaerella longispina	colony	12			22	60	2	1	
Dinobryon bavaricum	colony								
Dinobryon cylindricum	colony								
Dinobryon divergens	colony			5	40	12	5	7	
Dinobryon sociale var. americanum	colony								
Dinobryon sp.	unicell							5	
Epipyxis sp.	unicell							42	
Kephyrion boreale	unicell								
Kephyrion planctonicum	unicell								
Kephryion skujae	unicell								
Mallomonas akrokomos	unicell						1		
Mallomonas sp.	unicell								
Ochromonas sp.	unicell						125		
Salpingoeca sp.	unicell								
statospore of Chrysolykos	unicell								
statospore of Dinobryon	unicell								
Synura sp.	colony								
XANTHOPHYTA (yellow-green algae)									
Centritractus sp.	unicell								

Lake Metonga - Deep Hole Site
Phytoplankton Data - Density Metric
2003

Date		8/27/2003	8/27/2003	8/27/2003	9/12/2003	9/28/2003	9/28/2003	9/28/2003	10/13/2003*
		#1	#2	#3		#1	#2	#3	
	Unit								
BACILLARIOPHYTA (diatoms)									
Asterionella formosa	colony				32.5	88	22	62	
Aulacoseira ambigua	filament								
Aulacoseira granulata var. angustissima	filament								
Aulacoseira granulata var. granulata	filament							8	
Aulacoseira italica	filament								
Aulacoseira subarctica	filament								
Cymbella sp.	unicell						3		
Entomoneis ornata	unicell								
Fragilaria crotonensis	colony				55	256	244	64	
Fragilaria sp.	colony								
Navicula placentula	unicell								
Navicula radiosa	unicell								
Nitzschia acicularis	unicell								
Nitzschia gracilis	unicell								
Nitzschia linearis	unicell								
Nitzschia paleacea	colony								
Pinnularia maior	unicell								
Punticulata bodanica	unicell	4	1	9	2				
Rhizosolenia longiseta	unicell								
Stephanodiscus niagarae	unicell								
Synedra acus	unicell								
Synedra cyclopum	unicell								
Synedra delicatissima	unicell								
Synedra minuscula	colony				2.5				
Synedra rumpens var. familiaris	unicell								
Synedra sp.	unicell								
Tabellaria fenestrata	colony					22	52	94	
HAPTOPHYTA									
Chrysochromulina sp.	unicell	680	800	930	620				
CRYPTOPHYTA									

Lake Metonga - Deep Hole Site
Phytoplankton Data - Density Metric
2003

Date		8/27/2003	8/27/2003	8/27/2003	9/12/2003	9/28/2003	9/28/2003	9/28/2003	10/13/2003*
		#1	#2	#3		#1	#2	#3	
	Unit								
Campylomonas reflexa	unicell	14	1	3	10	9	10	23	
Campylomonas reflexa	unicell	15	2	14	52.5	29	46	60	
Cryptomonas erosa	unicell								
Cryptomonas ovata	unicell						7	21	
Cryptomonas rostratiformis	unicell					12	3	15	
Cryptomonas sp.	unicell								
Hemiselmis sp.	unicell				10	300			
Komma caudata	unicell	370	70	460					
Plagioselmis nannoplanctica	unicell	340	100	150	650	310	220	110	
DINOPHYTA (dinoflagellates)									
Ceratium hirundinella f. piburgense	unicell		1		7.5			1	
Glenodinium sp.	unicell								
Peridiniopsis edax	unicell								
Peridiniopsis kulczynskii	unicell								
Peridiniopsis sp.	unicell								
Peridiniopsis quadridens	unicell								
Peridinium sp.	unicell	1	1	1					
EUGLENOPHYTA									
Colacium vesiculosum	unicell								
Euglena ehrenbergii	unicell								
Euglena sp.	unicell								
Euglena viridis	unicell								
Trachelomonas dybowskii	unicell								
Trachelomonas sp.	unicell								
Trachelomonas varians	unicell						1	2	
PRASINOPHYTA									
Pedinomonas sp.	unicell								
CHLOROPHYTA (green algae)									
Ankistrodesmus fusiformis		2							
Ankyra judayi	unicell	3	4	2	15	10	6	15	

Lake Metonga - Deep Hole Site
Phytoplankton Data - Density Metric
2003

Date		8/27/2003	8/27/2003	8/27/2003	9/12/2003	9/28/2003	9/28/2003	9/28/2003	10/13/2003*
		#1	#2	#3		#1	#2	#3	
	Unit								
Botryococcus sp.	colony				19				
Carteria sp.	unicell								
Chlamydocapsa ampla	colony						8	56	
Chlamydomonas globosa	unicell				30				
Chlamydomonas sp.	unicell	20							
Chlorella minutissima	unicell	1000	2000	937.5		17062.5	10937.5	9125	
Chlorella vulgaris	unicell								
Chlorococcum sp.	unicell								
Choricystis sp.	unicell								
Closterium acutum var. variabile	unicell								
Coelastrum microporum	colony								
Coenochloris fottii	colony	51	42	80	15			44	
Coenococcus planctonicus	colony								
Cosmarium bioculatum	unicell								
Cosmarium botrytis var. subtumidum	unicell								
Cosmarium depressum var. achondrum	unicell								
Cosmarium phaseolus f. minus	unicell								
Cosmarium trilobulatum	unicell								
Cosmarium tuddalense var. pachydermiforme	unicell								
Crucigeniella apiculata	colony								
Crucigeniella rectangularis	colony	28	84	34					
Dictysosphaerium sp.	colony	4							
Elakatothrix viridis	colony								
Eremosphaera sp.	colony								
Eudorina elegans	colony	10					26	36	
Keratococcus sp.	unicell								
Lagerheimia ciliata	unicell								
Monomastix sp.	unicell				30				
Monoraphidium minutum	unicell								
Mougeotia sp.	filament								
Nephrocytium limneticum	colony				10				
Oocystis lacustris	colony					3			
Oocystis parva	colony				32				
Oocystis sp.	colony	200	40	140					

Lake Metonga - Deep Hole Site
Phytoplankton Data - Density Metric
2003

Date		8/27/2003	8/27/2003	8/27/2003	9/12/2003	9/28/2003	9/28/2003	9/28/2003	10/13/2003*
		#1	#2	#3		#1	#2	#3	
	Unit								
Oocystis submarina	colony								
Pandorina smithii	colony				13				
Pediastrum boryanum	colony			26				36	
Pediastrum tetras	colony								
Quadrioccus ellipticus	colony	226							
Scenedesmus bicaudatus	colony								
Scenedesmus communis	colony								
Scenedesmus ecornis	colony								
Scenedesmus sp.	colony								
Scenedesmus spinosus	colony								
Spondylosium planum	filament								
Staurastrum sp.	unicell								
Tetraedron minimum	unicell								
Tetraspora sp.	colony								
Volvox globator	colony								
TOTAL		44046	31429	60982	49584	21791.5	12246.5	12031	

Density=cells/mL

*10/13/03 bottle broken during shipping

Lake Metonga - Deep Hole Site
Phytoplankton Data - Density Metric
2003

Date		10/24/2003	10/24/2003	10/24/2003
		#1	#2	#3
	Unit			
CYANOPHYTA (blue-green algae)				
Anabaena catenula var. affinis	filament			
Anabaena flos-aquae	filament	20	12	70
Anabaena fusca	filament		150	
Anabaena mendotae	filament			
Anabaena perturbata	filament			
Anabaena sp.	filament			
Aphanizomenon flos-aquae	filament	320	70	320
Aphanocapsa conferta	colony			
Aphanocapsa delicatissima	colony			
Aphanocapsa incerta	colony			
Aphanothece clathrata	colony			
Aphanothece minutissima	colony	2000		
Aphanothece smithii	colony			
Chroococcus dispersus	colony			
Chroococcus limneticus	colony	50	30	16
Chroococcus prescottii	colony			
Chroococcus sp.	colony			
Coelomoron sp.	colony			
Coelosphaerium aerugineum	colony			
Cyanobium sp.	unicell		250	
Gloeotricha echinulata	colony			
Lyngbya birgei	filament			
Lyngbya limnetica	filament			
Merismopedia tenuissima	colony			
Merismopedia trolleri	colony			
Microcystis flos-aquae	colony			
Microcystis smithii	colony			
Myxobaktron sp.	unicell			
Oscillatoria agardhii	filament			
Oscillatoria curviceps	filament			
Oscillatoria limnetica	filament			
Oscillatoria sp. 1	filament			
Oscillatoria sp. 2	filament			

Lake Metonga - Deep Hole Site
Phytoplankton Data - Density Metric
2003

Date		10/24/2003	10/24/2003	10/24/2003
		#1	#2	#3
	Unit			
Rhabdogloea sp.	colony			
Synechococcus sigmoideus	unicell			
Synechocystis sp.	unicell			
Trichodesmium lacustre	filament			
Woronichinia compacta	colony	1010	1000	900
CHRYSOPHYTA (golden-brown algae)				
Bicosoeca ruttneri	unicell			
Chromulina sp. 1	unicell	187.5	1875	625
Chromulina sp. 2	unicell			
Chrysocapsa planctonica	colony		8	
Chrysococcus sp.	unicell			
Chrysolykos planctonicus	unicell			
Chrysolykos skujae	unicell			
Chrysosphaerella longispina	colony			
Dinobryon bavaricum	colony			
Dinobryon cylindricum	colony			
Dinobryon divergens	colony	50	12.5	55
Dinobryon sociale var. americanum	colony			
Dinobryon sp.	unicell			
Epipyxis sp.	unicell			
Kephyrion boreale	unicell			
Kephyrion planctonicum	unicell			
Kephryion skujae	unicell			
Mallomonas akrokomos	unicell			
Mallomonas sp.	unicell			
Ochromonas sp.	unicell		62.5	375
Salpingoeca sp.	unicell			
statospore of Chrysolykos	unicell			
statospore of Dinobryon	unicell			
Synura sp.	colony			
XANTHOPHYTA (yellow-green algae)				
Centritractus sp.	unicell			

Lake Metonga - Deep Hole Site
Phytoplankton Data - Density Metric
2003

Date		10/24/2003	10/24/2003	10/24/2003
		#1	#2	#3
	Unit			
BACILLARIOPHYTA (diatoms)				
Asterionella formosa	colony		10	12
Aulacoseira ambigua	filament			
Aulacoseira granulata var. angustissima	filament	50	5	
Aulacoseira granulata var. granulata	filament		82.5	
Aulacoseira italica	filament	115	25	27.5
Aulacoseira subarctica	filament			
Cymbella sp.	unicell			
Entomoneis ornata	unicell			
Fragilaria crotonensis	colony	50	70	70
Fragilaria sp.	colony			
Navicula placentula	unicell			
Navicula radiosa	unicell			
Nitzschia acicularis	unicell			
Nitzschia gracilis	unicell			
Nitzschia linearis	unicell			
Nitzschia paleacea	colony			
Pinnularia maior	unicell			
Punticulata bodanica	unicell		2.5	
Rhizosolenia longiseta	unicell			
Stephanodiscus niagarae	unicell		1	
Synedra acus	unicell			
Synedra cyclopum	unicell			
Synedra delicatissima	unicell			
Synedra minuscula	colony			
Synedra rumpens var. familiaris	unicell			
Synedra sp.	unicell			
Tabellaria fenestrata	colony	965	815	470
HAPTOPHYTA				
Chrysochromulina sp.	unicell	20	50	30
CRYPTOPHYTA				

Lake Metonga - Deep Hole Site
Phytoplankton Data - Density Metric
2003

Date		10/24/2003	10/24/2003	10/24/2003
		#1	#2	#3
	Unit			
Campylomonas reflexa	unicell		2.5	10
Campylomonas reflexa	unicell	25	25	25
Cryptomonas erosa	unicell			
Cryptomonas ovata	unicell			
Cryptomonas rostratiformis	unicell	10	5	5
Cryptomonas sp.	unicell			
Hemiselmis sp.	unicell			
Komma caudata	unicell		60	30
Plagioselmis nannoplanctica	unicell	200	110	130
DINOPHYTA (dinoflagellates)				
Ceratium hirundinella f. piburgense	unicell			
Glenodinium sp.	unicell			
Peridiniopsis edax	unicell			
Peridiniopsis kulczynskii	unicell			
Peridiniopsis sp.	unicell			
Peridiniopsis quadridens	unicell			
Peridinium sp.	unicell			
EUGLENOPHYTA				
Colacium vesiculosum	unicell			2.5
Euglena ehrenbergii	unicell			
Euglena sp.	unicell			
Euglena viridis	unicell			
Trachelomonas dybowskii	unicell			
Trachelomonas sp.	unicell			
Trachelomonas varians	unicell			
PRASINOPHYTA				
Pedinomonas sp.	unicell			
CHLOROPHYTA (green algae)				
Ankistrodesmus fusiformis				
Ankyra judayi	unicell	1	10	2.5

Lake Metonga - Deep Hole Site
Phytoplankton Data - Density Metric
2003

Date		10/24/2003	10/24/2003	10/24/2003
		#1	#2	#3
	Unit			
Botryococcus sp.	colony			
Carteria sp.	unicell			
Chlamydocapsa ampla	colony			
Chlamydomonas globosa	unicell			100
Chlamydomonas sp.	unicell			
Chlorella minutissima	unicell	250	125	1875
Chlorella vulgaris	unicell			
Chlorococcum sp.	unicell			
Choricystis sp.	unicell			
Closterium acutum var. variabile	unicell			
Coelastrum microporum	colony			
Coenochloris fottii	colony	8	30	
Coenococcus planctonicus	colony			
Cosmarium bioculatum	unicell			
Cosmarium botrytis var. subtumidum	unicell			
Cosmarium depressum var. achondrum	unicell			
Cosmarium phaseolus f. minus	unicell			
Cosmarium trilobulatum	unicell			
Cosmarium tuddalense var. pachydermiforme	unicell			
Crucigeniella apiculata	colony			
Crucigeniella rectangularis	colony			
Dictysosphaerium sp.	colony		220	80
Elakatothrix viridis	colony			
Eremosphaera sp.	colony			
Eudorina elegans	colony		18	
Keratococcus sp.	unicell			
Lagerheimia ciliata	unicell			
Monomastix sp.	unicell			
Monoraphidium minutum	unicell			
Mougeotia sp.	filament			
Nephrocytium limneticum	colony			
Oocystis lacustris	colony			
Oocystis parva	colony			
Oocystis sp.	colony			

Date		10/24/2003	10/24/2003	10/24/2003
		#1	#2	#3
	Unit			
Oocystis submarina	colony			
Pandorina smithii	colony			
Pediastrum boryanum	colony			
Pediastrum tetras	colony			
Quadrioccus ellipticus	colony			
Scenedesmus bicaudatus	colony			
Scenedesmus communis	colony			
Scenedesmus ecornis	colony			
Scenedesmus sp.	colony			
Scenedesmus spinosus	colony			
Spondylosium planum	filament			
Staurastrum sp.	unicell			
Tetraedron minimum	unicell			
Tetraspora sp.	colony			
Volvox globator	colony			
TOTAL		5331.5	5136.5	5230.5

Density=cells/mL

*10/13/03 bottle broken during shipping

Date		5/8/2003	5/8/2003	5/8/2003	5/21/2003	6/6/2003	6/6/2003	6/6/2003	6/16/2003
		#1	#2	#3		#1	#2	#3	
	Unit								
CYANOPHYTA (blue-green algae)									
Anabaena catenula var. affinis	filament								
Anabaena flos-aquae	filament							942.4	4005
Anabaena fusca	filament								
Anabaena mendotae	filament								
Anabaena perturbata	filament								
Anabaena sp.	filament								
Aphanizomenon flos-aquae	filament		1886.3						
Aphanocapsa conferta	colony								
Aphanocapsa delicatissima	colony								
Aphanocapsa incerta	colony								
Aphanothece clathrata	colony					8400	8000	6000	
Aphanothece minutissima	colony		175	131.3	875	3500	10500	6737.5	43537.5
Aphanothece smithii	colony								
Chroococcus dispersus	colony								
Chroococcus limneticus	colony					877			3290
Chroococcus prescottii	colony								
Chroococcus sp.	colony								
Coelomoron sp.	colony								
Coelosphaerium aerugineum	colony								
Cyanobium sp.	unicell								
Gloeotricha echinulata	colony								
Lyngbya birgei	filament								
Lyngbya limnetica	filament	169.6							
Merismopedia tenuissima	colony								
Merismopedia trolleri	colony								
Microcystis flos-aquae	colony								
Microcystis smithii	colony								
Myxobaktron sp.	unicell		825	412.5					55.4
Oscillatoria agardhii	filament								
Oscillatoria curviceps	filament								
Oscillatoria limnetica	filament			176.4			216		
Oscillatoria sp. 1	filament								
Oscillatoria sp. 2	filament								

Lake Metonga - Deep Hole Site
Phytoplankton Data - Biovolume Metric
2003

Date		5/8/2003	5/8/2003	5/8/2003	5/21/2003	6/6/2003	6/6/2003	6/6/2003	6/16/2003
		#1	#2	#3		#1	#2	#3	
	Unit								
Rhabdogloea sp.	colony								
Synechococcus sigmoideus	unicell								
Synechocystis sp.	unicell								
Trichodesmium lacustre	filament								
Woronichinia compacta	colony								2436
CHRYSOPHYTA (golden-brown algae)									
Bicosoeca ruttneri	unicell								
Chromulina sp. 1	unicell	650	487.5	975	4062.5	2275	390	4062.5	262.5
Chromulina sp. 2	unicell								
Chrysocapsa planctonica	colony					6220.5			21420
Chrysococcus sp.	unicell								
Chrysolykos planctonicus	unicell								
Chrysolykos skujae	unicell	1628		1628					
Chrysosphaerella longispina	colony		3016				6160	4021	
Dinobryon bavaricum	colony			755					
Dinobryon cylindricum	colony	6126.3	12734	4712.5					
Dinobryon divergens	colony	48482.5	61705	96965	647625	9696.5	17630	44075	
Dinobryon sociale var. americanum	colony			9165					
Dinobryon sp.	unicell								
Epipyxis sp.	unicell								
Kephyrion boreale	unicell								
Kephyrion planctonicum	unicell								
Kephryion skujae	unicell		654.5						
Mallomonas akrokomos	unicell								
Mallomonas sp.	unicell					2304		1152	
Ochromonas sp.	unicell								
Salpingoeca sp.	unicell								
statospore of Chrysolykos	unicell								
statospore of Dinobryon	unicell								
Synura sp.	colony		28350		242550	95004	146276	128180	
XANTHOPHYTA (yellow-green algae)									
Centritractus sp.	unicell								83238

Lake Metonga - Deep Hole Site
Phytoplankton Data - Biovolume Metric
2003

Date		5/8/2003	5/8/2003	5/8/2003	5/21/2003	6/6/2003	6/6/2003	6/6/2003	6/16/2003
		#1	#2	#3		#1	#2	#3	
	Unit								
BACILLARIOPHYTA (diatoms)									
Asterionella formosa	colony	50676	8446	27449.5	65450				
Aulacoseira ambigua	filament								
Aulacoseira granulata var. angustissima	filament								10576.7
Aulacoseira granulata var. granulata	filament								
Aulacoseira italica	filament	9783.8							
Aulacoseira subarctica	filament				91229.2	2256.4	55282	34260	
Cymbella sp.	unicell								
Entomoneis ornata	unicell								
Fragilaria crotonensis	colony								
Fragilaria sp.	colony								
Navicula placentula	unicell								
Navicula radiosa	unicell								
Nitzschia acicularis	unicell	751.5	751.5	1503					
Nitzschia gracilis	unicell								
Nitzschia linearis	unicell								
Nitzschia paleacea	colony	2200		440				720	
Pinnularia maior	unicell								
Punticulata bodanica	unicell	109516.5	109516.5	273791.3	602341	597092	373182.5	507528.2	1077927.2
Rhizosolenia longiseta	unicell								
Stephanodiscus niagarae	unicell	831211.5	415758	277090.5	43372.3		76550.5		
Synedra acus	unicell								
Synedra cyclopum	unicell								3600
Synedra delicatissima	unicell								
Synedra minuscula	colony								
Synedra rumpens var. familiaris	unicell								
Synedra sp.	unicell								
Tabellaria fenestrata	colony	31320	109620	31320	55200	122544	49680	66240	
HAPTOPHYTA									
Chrysochromulina sp.	unicell	279390	310545	289775	2424	1236	2060		
CRYPTOPHYTA									

Lake Metonga - Deep Hole Site
Phytoplankton Data - Biovolume Metric
2003

Date		5/8/2003	5/8/2003	5/8/2003	5/21/2003	6/6/2003	6/6/2003	6/6/2003	6/16/2003
		#1	#2	#3		#1	#2	#3	
	Unit								
Campylomonas reflexa	unicell	38362.5	45337.5	52312.5	25525.5	6912.5	5530	6083	37178
Campylomonas reflexa	unicell	94250	37700	26390	67290.3	16950.5	22277.8	21309.2	60320
Cryptomonas erosa	unicell								
Cryptomonas ovata	unicell								
Cryptomonas rostratiformis	unicell	57965.5	43474	14491.3	64463.6	35647.5	147343	95423	35605
Cryptomonas sp.	unicell								
Hemiselmis sp.	unicell								
Komma caudata	unicell				8904	6874	4910	20622	
Plagioselmis nannoplanctica	unicell	78604	124168	151724	80040	22803	43533	20730	115164
DINOPHYTA (dinoflagellates)									
Ceratium hirundinella f. piburgense	unicell								
Glenodinium sp.	unicell								
Peridiniopsis edax	unicell								
Peridiniopsis kulczynskii	unicell								
Peridiniopsis sp.	unicell								
Peridiniopsis quadridens	unicell								
Peridinium sp.	unicell								
EUGLENOPHYTA									
Colacium vesiculosum	unicell				7540				905
Euglena ehrenbergii	unicell								
Euglena sp.	unicell								
Euglena viridis	unicell								
Trachelomonas dybowskii	unicell								
Trachelomonas sp.	unicell								
Trachelomonas varians	unicell								
PRASINOPHYTA									
Pedinomonas sp.	unicell						426		
CHLOROPHYTA (green algae)									
Ankistrodesmus fusiformis									
Ankyra judayi	unicell	1060.5	707	707		484.4	726.6	484.5	345.6

Lake Metonga - Deep Hole Site
Phytoplankton Data - Biovolume Metric
2003

Date		5/8/2003	5/8/2003	5/8/2003	5/21/2003	6/6/2003	6/6/2003	6/6/2003	6/16/2003
		#1	#2	#3		#1	#2	#3	
	Unit								
Botryococcus sp.	colony								
Carteria sp.	unicell								
Chlamydocapsa ampla	colony								
Chlamydomonas globosa	unicell								242.1
Chlamydomonas sp.	unicell								
Chlorella minutissima	unicell	4875	10075	1868.8	812.5	8450	812.5	975	650
Chlorella vulgaris	unicell								
Chlorococcum sp.	unicell								
Choricystis sp.	unicell								
Closterium acutum var. variabile	unicell								
Coelastrum microporum	colony								
Coenochloris fottii	colony						2835		11970
Coenococcus planctonicus	colony								
Cosmarium bioculatum	unicell								
Cosmarium botrytis var. subtumidum	unicell								
Cosmarium depressum var. achondrum	unicell								
Cosmarium phaseolus f. minus	unicell								
Cosmarium trilobulatum	unicell								
Cosmarium tuddalense var. pachydermiforme	unicell								
Crucigeniella apiculata	colony								
Crucigeniella rectangularis	colony								
Dictysosphaerium sp.	colony								
Elakatothrix viridis	colony	252.8		775		115			
Eremosphaera sp.	colony								
Eudorina elegans	colony								
Keratococcus sp.	unicell								
Lagerheimia ciliata	unicell								
Monomastix sp.	unicell								
Monoraphidium minutum	unicell								
Mougeotia sp.	filament								
Nephrocytium limneticum	colony								
Oocystis lacustris	colony						3920		
Oocystis parva	colony								
Oocystis sp.	colony								

Date		5/8/2003	5/8/2003	5/8/2003	5/21/2003	6/6/2003	6/6/2003	6/6/2003	6/16/2003
		#1	#2	#3		#1	#2	#3	
	Unit								
Oocystis submarina	colony								
Pandorina smithii	colony								
Pediastrum boryanum	colony				44177.3	9698			
Pediastrum tetras	colony								
Quadrioccus ellipticus	colony								
Scenedesmus bicaudatus	colony								
Scenedesmus communis	colony								
Scenedesmus ecornis	colony								
Scenedesmus sp.	colony								
Scenedesmus spinosus	colony								
Spondylosium planum	filament								
Staurastrum sp.	unicell								
Tetraedron minimum	unicell								
Tetraspora sp.	colony								
Volvox globator	colony								
TOTAL		1647276.0	1325931.8	1264558.6	2053882.2	959340.3	978240.9	969545.3	1512728.0

Biovolume=cubic micrometers/mL

*10/13/03 bottle broken during shipping

Lake Metonga - Deep Hole Site
Phytoplankton Data - Biovolume Metric
2003

Date		6/30/2003	6/30/2003	6/30/2003	7/18/2003	7/30/2003	7/30/2003	7/30/2003	8/14/2003
		#1	#2	#3		#1	#2	#3	
	Unit								
CYANOPHYTA (blue-green algae)									
Anabaena catenula var. affinis	filament								
Anabaena flos-aquae	filament	42304	126912	68744		447.4	5790.4	3801.1	14489
Anabaena fusca	filament								
Anabaena mendotae	filament								
Anabaena perturbata	filament				11083.8		17341	23635.4	
Anabaena sp.	filament								
Aphanizomenon flos-aquae	filament	4007.5				565.2			
Aphanocapsa conferta	colony								
Aphanocapsa delicatissima	colony								
Aphanocapsa incerta	colony								
Aphanothece clathrata	colony	2162.5	16406.3	15553.1			867		
Aphanothece minutissima	colony	35875	46200	40775	46594.1	25284	18421.2	21997.5	35000
Aphanothece smithii	colony								
Chroococcus dispersus	colony		3948	42300		2646	2872.8	2100	1428
Chroococcus limneticus	colony	8043	2694	2592	4190	678.6	8143.2	678.6	
Chroococcus prescottii	colony								
Chroococcus sp.	colony								
Coelomoron sp.	colony								
Coelosphaerium aerugineum	colony								
Cyanobium sp.	unicell								
Gloeotricha echinulata	colony								
Lyngbya birgei	filament					99325	38934		4085.4
Lyngbya limnetica	filament					259.2			
Merismopedia tenuissima	colony								
Merismopedia trolleri	colony								
Microcystis flos-aquae	colony								
Microcystis smithii	colony								
Myxobaktron sp.	unicell								
Oscillatoria agardhii	filament								
Oscillatoria curviceps	filament								
Oscillatoria limnetica	filament			27.6					
Oscillatoria sp. 1	filament								
Oscillatoria sp. 2	filament								

Lake Metonga - Deep Hole Site
Phytoplankton Data - Biovolume Metric
2003

Date		6/30/2003	6/30/2003	6/30/2003	7/18/2003	7/30/2003	7/30/2003	7/30/2003	8/14/2003
		#1	#2	#3		#1	#2	#3	
	Unit								
Rhabdogloea sp.	colony								
Synechococcus sigmoideus	unicell								
Synechocystis sp.	unicell								
Trichodesmium lacustre	filament								
Woronichinia compacta	colony		5250				849.5		
CHRYSOPHYTA (golden-brown algae)									
Bicosoeca ruttneri	unicell								
Chromulina sp. 1	unicell	2100	2362.5	4200	1462.5				
Chromulina sp. 2	unicell								
Chrysocapsa planctonica	colony	143990	48037.5	31500					
Chrysococcus sp.	unicell								
Chrysolykos planctonicus	unicell								
Chrysolykos skujae	unicell			433.7					
Chrysosphaerella longispina	colony	670.3		37800	212616.7	14296	6152.6	19919.8	
Dinobryon bavaricum	colony	3142	5105.8	1571	2947.5	1912.6	4427.8	301.3	
Dinobryon cylindricum	colony								
Dinobryon divergens	colony	2262		3393	6020.3	2125.4	5297.8	1769.4	440.7
Dinobryon sociale var. americanum	colony				10575	4531.6	6345	10152	507.6
Dinobryon sp.	unicell				1683				
Epipyxis sp.	unicell								
Kephyrion boreale	unicell		2375		205.8	556.2	1112.4	185.4	
Kephyrion planctonicum	unicell								
Kephryion skujae	unicell		16375	1310	3275	1179	301.5	1179	
Mallomonas akrokomos	unicell								
Mallomonas sp.	unicell								
Ochromonas sp.	unicell								
Salpingoeca sp.	unicell				471				
statospore of Chrysolykos	unicell								
statospore of Dinobryon	unicell								
Synura sp.	colony								
XANTHOPHYTA (yellow-green algae)									
Centritractus sp.	unicell								

Lake Metonga - Deep Hole Site
Phytoplankton Data - Biovolume Metric
2003

Date		6/30/2003	6/30/2003	6/30/2003	7/18/2003	7/30/2003	7/30/2003	7/30/2003	8/14/2003
		#1	#2	#3		#1	#2	#3	
	Unit								
BACILLARIOPHYTA (diatoms)									
Asterionella formosa	colony		23906.3	9562.5					
Aulacoseira ambigua	filament								
Aulacoseira granulata var. angustissima	filament								
Aulacoseira granulata var. granulata	filament								
Aulacoseira italica	filament								
Aulacoseira subarctica	filament			11666.3					
Cymbella sp.	unicell								
Entomoneis ornata	unicell								
Fragilaria crotonensis	colony							65331	203872.5
Fragilaria sp.	colony								
Navicula placentula	unicell								
Navicula radiosa	unicell								
Nitzschia acicularis	unicell								
Nitzschia gracilis	unicell								
Nitzschia linearis	unicell								
Nitzschia paleacea	colony								
Pinnularia maior	unicell								
Punticulata bodanica	unicell	1236970	1103790.2	781053	171761.5	33133.5	74366.3	33133.5	
Rhizosolenia longiseta	unicell				164928.8	26653.5	65175	38055	
Stephanodiscus niagarae	unicell			45995		53434.7	86240	38098.5	
Synedra acus	unicell					1434			
Synedra cyclopum	unicell								
Synedra delicatissima	unicell								
Synedra minuscula	colony	250	231.2			1080	1278.4	639.2	368
Synedra rumpens var. familiaris	unicell								
Synedra sp.	unicell								
Tabellaria fenestrata	colony		36984				4950	35500	20563.2
HAPTOPHYTA									
Chrysochromulina sp.	unicell	21780	21538	29040	40582	11494.8	7045.2	15388.2	47792
CRYPTOPHYTA									

Lake Metonga - Deep Hole Site
Phytoplankton Data - Biovolume Metric
2003

Date		6/30/2003	6/30/2003	6/30/2003	7/18/2003	7/30/2003	7/30/2003	7/30/2003	8/14/2003
		#1	#2	#3		#1	#2	#3	
	Unit								
Campylomonas reflexa	unicell						280.5		
Campylomonas reflexa	unicell	14243.3	42729.8	35606.3	41231.8	13194.2	111444.7	39818.1	
Cryptomonas erosa	unicell								
Cryptomonas ovata	unicell					5406	21300.5		3290.6
Cryptomonas rostratiformis	unicell							7832.8	
Cryptomonas sp.	unicell								
Hemiselmis sp.	unicell								
Komma caudata	unicell					18173.7	27432	21114	6210
Plagioselmis nannoplanctica	unicell	65940	101108	112098	64448	10629	31887	2362	11872
DINOPHYTA (dinoflagellates)									
Ceratium hirundinella f. piburgense	unicell						58775.2	26716	44483.7
Glenodinium sp.	unicell					6132.6	6523		
Peridiniopsis edax	unicell								
Peridiniopsis kulczynskii	unicell								
Peridiniopsis sp.	unicell								
Peridiniopsis quadridens	unicell								
Peridinium sp.	unicell	4431.6	4431.6			6969			
EUGLENOPHYTA									
Colacium vesiculosum	unicell								
Euglena ehrenbergii	unicell								
Euglena sp.	unicell								
Euglena viridis	unicell								
Trachelomonas dybowskii	unicell								15550.4
Trachelomonas sp.	unicell								
Trachelomonas varians	unicell						19265		
PRASINOPHYTA									
Pedinomonas sp.	unicell								
CHLOROPHYTA (green algae)									
Ankistrodesmus fusiformis							42.6	105.8	48.4
Ankyra judayi	unicell		149.3	597	330		320.4	161.5	

Lake Metonga - Deep Hole Site
Phytoplankton Data - Biovolume Metric
2003

Date		6/30/2003	6/30/2003	6/30/2003	7/18/2003	7/30/2003	7/30/2003	7/30/2003	8/14/2003
		#1	#2	#3		#1	#2	#3	
	Unit								
Botryococcus sp.	colony		7506.8				10858.1		
Carteria sp.	unicell								1385.8
Chlamydocapsa ampla	colony								
Chlamydomonas globosa	unicell				654.5				
Chlamydomonas sp.	unicell								
Chlorella minutissima	unicell	375	487.5	215.6	487.5	67.1	67.1	67.1	325
Chlorella vulgaris	unicell								
Chlorococcum sp.	unicell								
Choricystis sp.	unicell								
Closterium acutum var. variabile	unicell								
Coelastrum microporum	colony								
Coenochloris fottii	colony		1608.6	8662.5	1310		14175	1206.5	2035.8
Coenococcus planctonicus	colony								
Cosmarium bioculatum	unicell								
Cosmarium botrytis var. subtumidum	unicell								
Cosmarium depressum var. achondrum	unicell								
Cosmarium phaseolus f. minus	unicell								
Cosmarium trilobulatum	unicell								
Cosmarium tuddalense var. pachydermiforme	unicell					10730			
Crucigeniella apiculata	colony								
Crucigeniella rectangularis	colony					1768.5			1048
Dictysosphaerium sp.	colony								
Elakatothrix viridis	colony	2274.8							
Eremosphaera sp.	colony								
Eudorina elegans	colony								
Keratococcus sp.	unicell								
Lagerheimia ciliata	unicell								
Monomastix sp.	unicell								
Monoraphidium minutum	unicell								
Mougeotia sp.	filament								
Nephrocytium limneticum	colony								
Oocystis lacustris	colony	21860	17488	8744		1809.5			
Oocystis parva	colony								1988.1
Oocystis sp.	colony						738		

Lake Metonga - Deep Hole Site
Phytoplankton Data - Biovolume Metric
2003

Date		6/30/2003	6/30/2003	6/30/2003	7/18/2003	7/30/2003	7/30/2003	7/30/2003	8/14/2003
		#1	#2	#3		#1	#2	#3	
	Unit								
Oocystis submarina	colony								
Pandorina smithii	colony	9450	1417.5						
Pediastrum boryanum	colony			5541.6					3117.2
Pediastrum tetras	colony				601		1472.6		
Quadrioccus ellipticus	colony								
Scenedesmus bicaudatus	colony								
Scenedesmus communis	colony						408.6		
Scenedesmus ecornis	colony								
Scenedesmus sp.	colony								
Scenedesmus spinosus	colony								
Spondylosium planum	filament								
Staurastrum sp.	unicell								
Tetraedron minimum	unicell				32		905.4		
Tetraspora sp.	colony								
Volvox globator	colony								
TOTAL		1622131.0	1639042.9	1298981.2	787491.8	355916.3	661806.8	411248.7	419901.4

Biovolume=cubic micrometers/mL

*10/13/03 bottle broken during shipping

Lake Metonga - Deep Hole Site
Phytoplankton Data - Biovolume Metric
2003

Date		8/27/2003	8/27/2003	8/27/2003	9/12/2003	9/28/2003	9/28/2003	9/28/2003	10/13/2003*
		#1	#2	#3		#1	#2	#3	
	Unit								
CYANOPHYTA (blue-green algae)									
Anabaena catenula var. affinis	filament								
Anabaena flos-aquae	filament	24732	2473.2	1099.2	1885	8717.2	706.8	942.4	
Anabaena fusca	filament								
Anabaena mendotae	filament								
Anabaena perturbata	filament		3340.5			4410		9765	
Anabaena sp.	filament								
Aphanizomenon flos-aquae	filament				1508	34226	987.8	10173.6	
Aphanocapsa conferta	colony								
Aphanocapsa delicatissima	colony							562.5	
Aphanocapsa incerta	colony								
Aphanothece clathrata	colony				3412.5	3937.5			
Aphanothece minutissima	colony	28131.6	19250	39900	31062.5	700			
Aphanothece smithii	colony								
Chroococcus dispersus	colony	1663.2	1822.8	982.8	525				
Chroococcus limneticus	colony	14664	8460	10152	327.5	5898.2			
Chroococcus prescottii	colony								
Chroococcus sp.	colony								
Coelomoron sp.	colony								
Coelosphaerium aerugineum	colony							761.4	
Cyanobium sp.	unicell				112.5		525	112.5	
Gloeotricha echinulata	colony								
Lyngbya birgei	filament								
Lyngbya limnetica	filament					7.8			
Merismopedia tenuissima	colony								
Merismopedia trolleri	colony								
Microcystis flos-aquae	colony						7205		
Microcystis smithii	colony								
Myxobaktron sp.	unicell								
Oscillatoria agardhii	filament								
Oscillatoria curviceps	filament								
Oscillatoria limnetica	filament					102.6		108	
Oscillatoria sp. 1	filament								
Oscillatoria sp. 2	filament								

Lake Metonga - Deep Hole Site
Phytoplankton Data - Biovolume Metric
2003

Date		8/27/2003	8/27/2003	8/27/2003	9/12/2003	9/28/2003	9/28/2003	9/28/2003	10/13/2003*
		#1	#2	#3		#1	#2	#3	
	Unit								
Rhabdogloea sp.	colony								
Synechococcus sigmoideus	unicell								
Synechocystis sp.	unicell								
Trichodesmium lacustre	filament								
Woronichinia compacta	colony			4260	8875	355	923	2840	
CHRYSOPHYTA (golden-brown algae)									
Bicosoeca ruttneri	unicell								
Chromulina sp. 1	unicell	650	650	812.5	1837.5			812.5	
Chromulina sp. 2	unicell								
Chrysocapsa planctonica	colony								
Chrysococcus sp.	unicell								
Chrysolykos planctonicus	unicell								
Chrysolykos skujae	unicell								
Chrysosphaerella longispina	colony	3217.2			27720	75600	2520	1260	
Dinobryon bavaricum	colony								
Dinobryon cylindricum	colony								
Dinobryon divergens	colony			2513	22400	9650.4	4021	5629.4	
Dinobryon sociale var. americanum	colony								
Dinobryon sp.	unicell							523.5	
Epipyxis sp.	unicell							2751	
Kephyrion boreale	unicell								
Kephyrion planctonicum	unicell								
Kephryion skujae	unicell								
Mallomonas akrokomos	unicell						697.4		
Mallomonas sp.	unicell								
Ochromonas sp.	unicell						787.5		
Salpingoeca sp.	unicell								
statospore of Chrysolykos	unicell								
statospore of Dinobryon	unicell								
Synura sp.	colony								
XANTHOPHYTA (yellow-green algae)									
Centritractus sp.	unicell								

Lake Metonga - Deep Hole Site
Phytoplankton Data - Biovolume Metric
2003

Date		8/27/2003	8/27/2003	8/27/2003	9/12/2003	9/28/2003	9/28/2003	9/28/2003	10/13/2003*
		#1	#2	#3		#1	#2	#3	
	Unit								
BACILLARIOPHYTA (diatoms)									
Asterionella formosa	colony				25415	134640	35660	94860	
Aulacoseira ambigua	filament								
Aulacoseira granulata var. angustissima	filament								
Aulacoseira granulata var. granulata	filament							21990.4	
Aulacoseira italica	filament								
Aulacoseira subarctica	filament								
Cymbella sp.	unicell						78970.5		
Entomoneis ornata	unicell								
Fragilaria crotonensis	colony				123750	227968	217282	56992	
Fragilaria sp.	colony								
Navicula placentula	unicell								
Navicula radiosa	unicell								
Nitzschia acicularis	unicell								
Nitzschia gracilis	unicell								
Nitzschia linearis	unicell								
Nitzschia paleacea	colony								
Pinnularia maior	unicell								
Punticulata bodanica	unicell	22807.2	5701.8	66266	19003.6				
Rhizosolenia longiseta	unicell								
Stephanodiscus niagarae	unicell								
Synedra acus	unicell								
Synedra cyclopum	unicell								
Synedra delicatissima	unicell								
Synedra minuscula	colony				380				
Synedra rumpens var. familiaris	unicell								
Synedra sp.	unicell								
Tabellaria fenestrata	colony					82579.2	195187.2	352838.4	
HAPTOPHYTA									
Chrysochromulina sp.	unicell	14008	16480	19158	12772				
CRYPTOPHYTA									

Lake Metonga - Deep Hole Site
Phytoplankton Data - Biovolume Metric
2003

Date		8/27/2003	8/27/2003	8/27/2003	9/12/2003	9/28/2003	9/28/2003	9/28/2003	10/13/2003*
		#1	#2	#3		#1	#2	#3	
	Unit								
Campylomonas reflexa	unicell	5866	419	1257	4691.3	7869.6	8744	20111.2	
Campylomonas reflexa	unicell	13744.5	1832.6	12828.2	134211	59163	93844.6	122406	
Cryptomonas erosa	unicell								
Cryptomonas ovata	unicell						58641.1	175923.3	
Cryptomonas rostratiformis	unicell					96758.4	24189.6	120949	
Cryptomonas sp.	unicell								
Hemiselmis sp.	unicell				71.2	3150			
Komma caudata	unicell	41181	7791	51198					
Plagioselmis nannoplanctica	unicell	62152	18280	27420	110240	56668	40216	20108	
DINOPHYTA (dinoflagellates)									
Ceratium hirundinella f. piburgense	unicell		134992		1012440			146622	
Glenodinium sp.	unicell								
Peridiniopsis edax	unicell								
Peridiniopsis kulczynskii	unicell								
Peridiniopsis sp.	unicell								
Peridiniopsis quadridens	unicell								
Peridinium sp.	unicell	3212.5	3212.5	3212.5					
EUGLENOPHYTA									
Colacium vesiculosum	unicell								
Euglena ehrenbergii	unicell								
Euglena sp.	unicell								
Euglena viridis	unicell								
Trachelomonas dybowskii	unicell								
Trachelomonas sp.	unicell								
Trachelomonas varians	unicell						1767.1	3534.2	
PRASINOPHYTA									
Pedinomonas sp.	unicell								
CHLOROPHYTA (green algae)									
Ankistrodesmus fusiformis		104.8							
Ankyra judayi	unicell	106.8	142.4	71.6	581.2	687	412.2	999	

Lake Metonga - Deep Hole Site
Phytoplankton Data - Biovolume Metric
2003

Date		8/27/2003	8/27/2003	8/27/2003	9/12/2003	9/28/2003	9/28/2003	9/28/2003	10/13/2003*
		#1	#2	#3		#1	#2	#3	
	Unit								
Botryococcus sp.	colony				1244.5				
Carteria sp.	unicell								
Chlamydocapsa ampla	colony						19508.8	50668.8	
Chlamydomonas globosa	unicell				855				
Chlamydomonas sp.	unicell	84							
Chlorella minutissima	unicell	2600	5200	2437.5		44362.5	28437.5	23725	
Chlorella vulgaris	unicell								
Chlorococcum sp.	unicell								
Choricystis sp.	unicell								
Closterium acutum var. variabile	unicell								
Coelastrum microporum	colony								
Coenochloris fottii	colony	3340.5	2751	5240	982.5			6930	
Coenococcus planctonicus	colony								
Cosmarium bioculatum	unicell								
Cosmarium botrytis var. subtumidum	unicell								
Cosmarium depressum var. achondrum	unicell								
Cosmarium phaseolus f. minus	unicell								
Cosmarium trilobulatum	unicell								
Cosmarium tuddalense var. pachydermiforme	unicell								
Crucigeniella apiculata	colony								
Crucigeniella rectangularis	colony	6580	19740	7990					
Dictysosphaerium sp.	colony	82.4							
Elakatothrix viridis	colony								
Eremosphaera sp.	colony								
Eudorina elegans	colony	1575					4669.6	9651.6	
Keratococcus sp.	unicell								
Lagerheimia ciliata	unicell								
Monomastix sp.	unicell				1452				
Monoraphidium minutum	unicell								
Mougeotia sp.	filament								
Nephrocytium limneticum	colony				8377				
Oocystis lacustris	colony					2623.2			
Oocystis parva	colony				5026.4				
Oocystis sp.	colony	2100	420	1470					

Lake Metonga - Deep Hole Site
Phytoplankton Data - Biovolume Metric
2003

Date		8/27/2003	8/27/2003	8/27/2003	9/12/2003	9/28/2003	9/28/2003	9/28/2003	10/13/2003*
		#1	#2	#3		#1	#2	#3	
	Unit								
Oocystis submarina	colony								
Pandorina smithii	colony				2047.5				
Pediastrum boryanum	colony			13744				13155	
Pediastrum tetras	colony								
Quadrioccus ellipticus	colony	9175.6							
Scenedesmus bicaudatus	colony								
Scenedesmus communis	colony								
Scenedesmus ecornis	colony								
Scenedesmus sp.	colony								
Scenedesmus spinosus	colony								
Spondylosium planum	filament								
Staurastrum sp.	unicell								
Tetraedron minimum	unicell								
Tetraspora sp.	colony								
Volvox globator	colony								
TOTAL		261778.3	252958.8	272012.3	1563205.7	860073.6	825903.7	1277705.7	

Biovolume=cubic micrometers/mL

*10/13/03 bottle broken during shipping

Lake Metonga - Deep Hole Site
Phytoplankton Data - Biovolume Metric
2003

Date		10/24/2003	10/24/2003	10/24/2003
		#1	#2	#3
	Unit			
CYANOPHYTA (blue-green algae)				
Anabaena catenula var. affinis	filament			
Anabaena flos-aquae	filament	3960	2376	9618
Anabaena fusca	filament		23625	
Anabaena mendotae	filament			
Anabaena perturbata	filament			
Anabaena sp.	filament			
Aphanizomenon flos-aquae	filament	17440	3815	37696
Aphanocapsa conferta	colony			
Aphanocapsa delicatissima	colony			
Aphanocapsa incerta	colony			
Aphanothece clathrata	colony			
Aphanothece minutissima	colony	1400		
Aphanothece smithii	colony			
Chroococcus dispersus	colony			
Chroococcus limneticus	colony	8980	3141	1675.2
Chroococcus prescottii	colony			
Chroococcus sp.	colony			
Coelomoron sp.	colony			
Coelosphaerium aerugineum	colony			
Cyanobium sp.	unicell		750	
Gloeotricha echinulata	colony			
Lyngbya birgei	filament			
Lyngbya limnetica	filament			
Merismopedia tenuissima	colony			
Merismopedia trolleri	colony			
Microcystis flos-aquae	colony			
Microcystis smithii	colony			
Myxobaktron sp.	unicell			
Oscillatoria agardhii	filament			
Oscillatoria curviceps	filament			
Oscillatoria limnetica	filament			
Oscillatoria sp. 1	filament			
Oscillatoria sp. 2	filament			

Date		10/24/2003	10/24/2003	10/24/2003
		#1	#2	#3
	Unit			
Rhabdogloea sp.	colony			
Synechococcus sigmoideus	unicell			
Synechocystis sp.	unicell			
Trichodesmium lacustre	filament			
Woronichinia compacta	colony	36663	16400	14760
CHRYSOPHYTA (golden-brown algae)				
Bicosoeca ruttneri	unicell			
Chromulina sp. 1	unicell	487.5	7875	2625
Chromulina sp. 2	unicell			
Chrysocapsa planctonica	colony		1436.8	
Chrysococcus sp.	unicell			
Chrysolykos planctonicus	unicell			
Chrysolykos skujae	unicell			
Chrysosphaerella longispina	colony			
Dinobryon bavaricum	colony			
Dinobryon cylindricum	colony			
Dinobryon divergens	colony	18805	2617.5	11517
Dinobryon sociale var. americanum	colony			
Dinobryon sp.	unicell			
Epipyxis sp.	unicell			
Kephyrion boreale	unicell			
Kephyrion planctonicum	unicell			
Kephryion skujae	unicell			
Mallomonas akrokomos	unicell			
Mallomonas sp.	unicell			
Ochromonas sp.	unicell		443.8	2662.5
Salpingoeca sp.	unicell			
statospore of Chrysolykos	unicell			
statospore of Dinobryon	unicell			
Synura sp.	colony			
XANTHOPHYTA (yellow-green algae)				
Centritractus sp.	unicell			

Lake Metonga - Deep Hole Site
Phytoplankton Data - Biovolume Metric
2003

Date		10/24/2003	10/24/2003	10/24/2003
		#1	#2	#3
	Unit			
BACILLARIOPHYTA (diatoms)				
Asterionella formosa	colony		14450	17340
Aulacoseira ambigua	filament			
Aulacoseira granulata var. angustissima	filament	33380	4908.6	
Aulacoseira granulata var. granulata	filament		191944.1	
Aulacoseira italica	filament	173420	37700	41470
Aulacoseira subarctica	filament			
Cymbella sp.	unicell			
Entomoneis ornata	unicell			
Fragilaria crotonensis	colony	34000	30450	271320
Fragilaria sp.	colony			
Navicula placentula	unicell			
Navicula radiosa	unicell			
Nitzschia acicularis	unicell			
Nitzschia gracilis	unicell			
Nitzschia linearis	unicell			
Nitzschia paleacea	colony			
Pinnularia maior	unicell			
Punticulata bodanica	unicell		18407.2	
Rhizosolenia longiseta	unicell			
Stephanodiscus niagarae	unicell		173410.8	
Synedra acus	unicell			
Synedra cyclopum	unicell			
Synedra delicatissima	unicell			
Synedra minuscula	colony			
Synedra rumpens var. familiaris	unicell			
Synedra sp.	unicell			
Tabellaria fenestrata	colony	3740340	3158940	3.4x12x95
HAPTOPHYTA				
Chrysochromulina sp.	unicell	508	1270	762
CRYPTOPHYTA				

Date		10/24/2003	10/24/2003	10/24/2003
		#1	#2	#3
	Unit			
Campylomonas reflexa	unicell		2225.3	8901
Campylomonas reflexa	unicell	47477.5	47477.5	47477.5
Cryptomonas erosa	unicell			
Cryptomonas ovata	unicell			
Cryptomonas rostratiformis	unicell	51620	25810	25810
Cryptomonas sp.	unicell			
Hemiselmis sp.	unicell			
Komma caudata	unicell		2070	1035
Plagioselmis nannoplanctica	unicell	22260	30250	35750
DINOPHYTA (dinoflagellates)				
Ceratium hirundinella f. piburgense	unicell			
Glenodinium sp.	unicell			
Peridiniopsis edax	unicell			
Peridiniopsis kulczynskii	unicell			
Peridiniopsis sp.	unicell			
Peridiniopsis quadridens	unicell			
Peridinium sp.	unicell			
EUGLENOPHYTA				
Colacium vesiculosum	unicell			1960.3
Euglena ehrenbergii	unicell			
Euglena sp.	unicell			
Euglena viridis	unicell			
Trachelomonas dybowskii	unicell			
Trachelomonas sp.	unicell			
Trachelomonas varians	unicell			
PRASINOPHYTA				
Pedinomonas sp.	unicell			
CHLOROPHYTA (green algae)				
Ankistrodesmus fusiformis				
Ankyra judayi	unicell	81.8	818	204.5

Date		10/24/2003	10/24/2003	10/24/2003
		#1	#2	#3
	Unit			
Botryococcus sp.	colony			
Carteria sp.	unicell			
Chlamydocapsa ampla	colony			
Chlamydomonas globosa	unicell			1410
Chlamydomonas sp.	unicell			
Chlorella minutissima	unicell	650	325	4875
Chlorella vulgaris	unicell			
Chlorococcum sp.	unicell			
Choricystis sp.	unicell			
Closterium acutum var. variabile	unicell			
Coelastrum microporum	colony			
Coenochloris fottii	colony	524	15707.5	
Coenococcus planctonicus	colony			
Cosmarium bioculatum	unicell			
Cosmarium botrytis var. subtumidum	unicell			
Cosmarium depressum var. achondrum	unicell			
Cosmarium phaseolus f. minus	unicell			
Cosmarium trilobulatum	unicell			
Cosmarium tuddalense var. pachydermiforme	unicell			
Crucigeniella apiculata	colony			
Crucigeniella rectangularis	colony			
Dictysosphaerium sp.	colony		4532	1648
Elakatothrix viridis	colony			
Eremosphaera sp.	colony			
Eudorina elegans	colony		9424.5	
Keratococcus sp.	unicell			
Lagerheimia ciliata	unicell			
Monomastix sp.	unicell			
Monoraphidium minutum	unicell			
Mougeotia sp.	filament			
Nephrocytium limneticum	colony			
Oocystis lacustris	colony			
Oocystis parva	colony			
Oocystis sp.	colony			

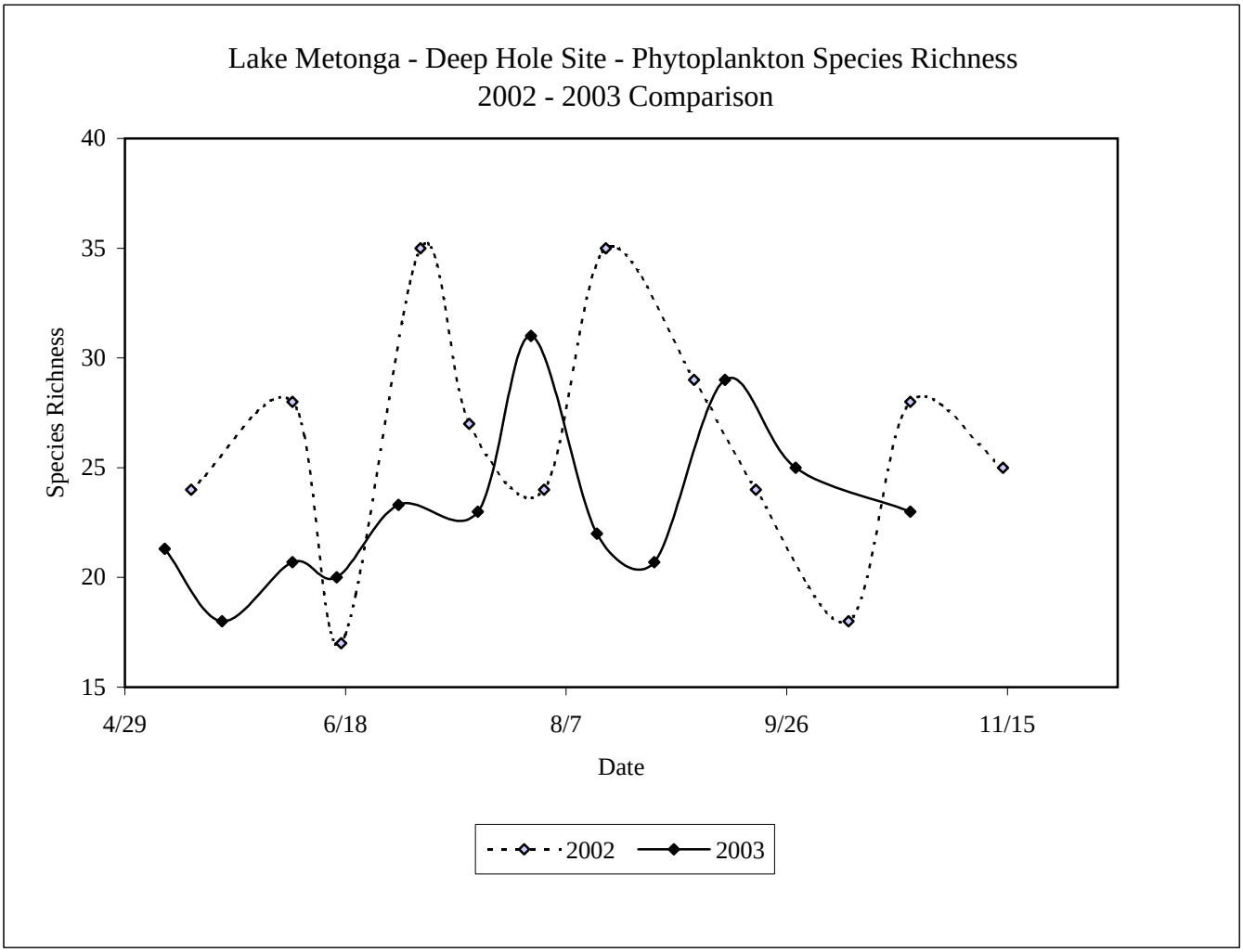
Lake Metonga - Deep Hole Site
Phytoplankton Data - Biovolume Metric
2003

Date		10/24/2003	10/24/2003	10/24/2003
		#1	#2	#3
	Unit			
Oocystis submarina	colony			
Pandorina smithii	colony			
Pediastrum boryanum	colony			
Pediastrum tetras	colony			
Quadrioccus ellipticus	colony			
Scenedesmus bicaudatus	colony			
Scenedesmus communis	colony			
Scenedesmus ecornis	colony			
Scenedesmus sp.	colony			
Scenedesmus spinosus	colony			
Spondylosium planum	filament			
Staurastrum sp.	unicell			
Tetraedron minimum	unicell			
Tetraspora sp.	colony			
Volvox globator	colony			
TOTAL		4191996.8	3832600.6	540517.0

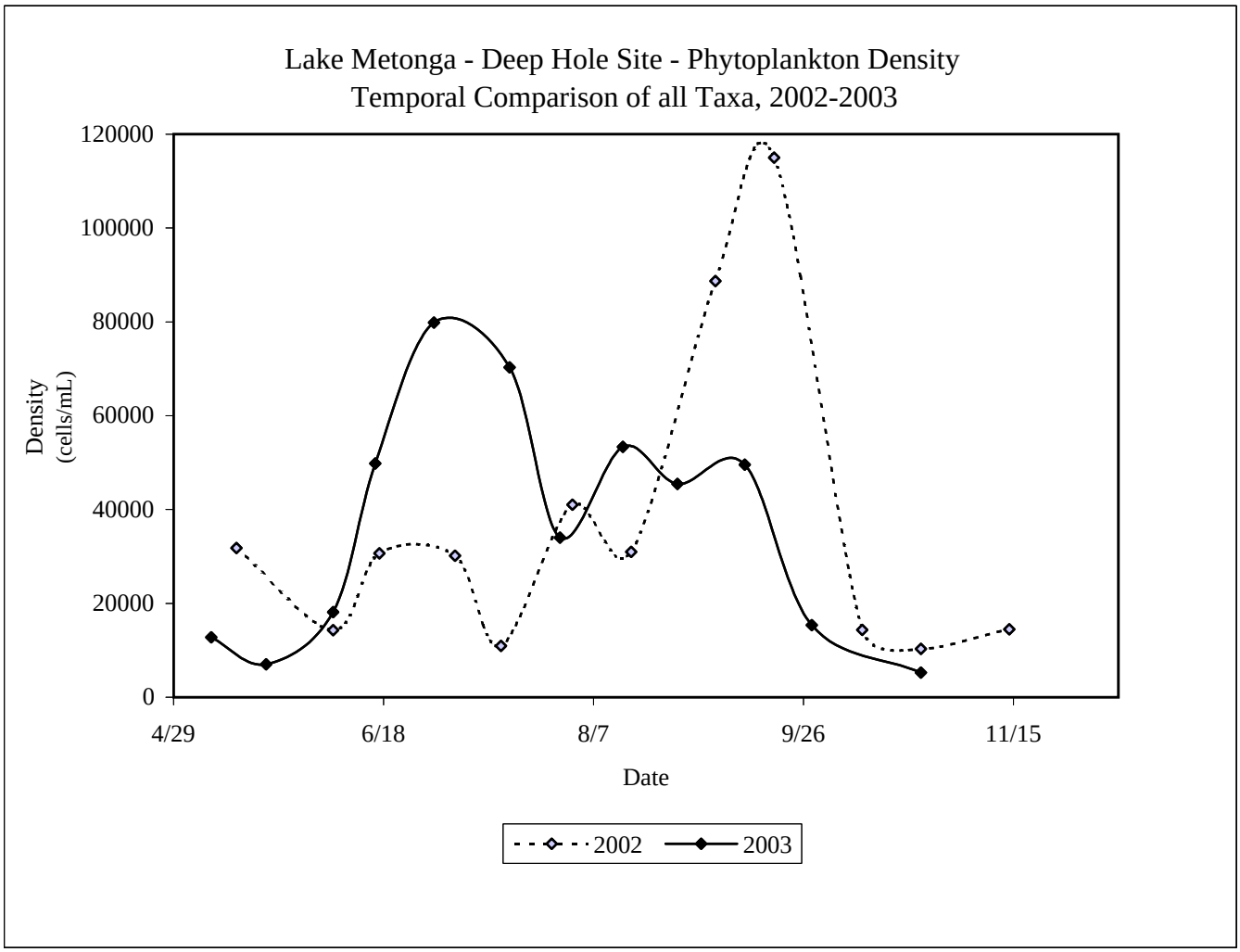
Biovolume=cubic micrometers/mL

*10/13/03 bottle broken during shipping

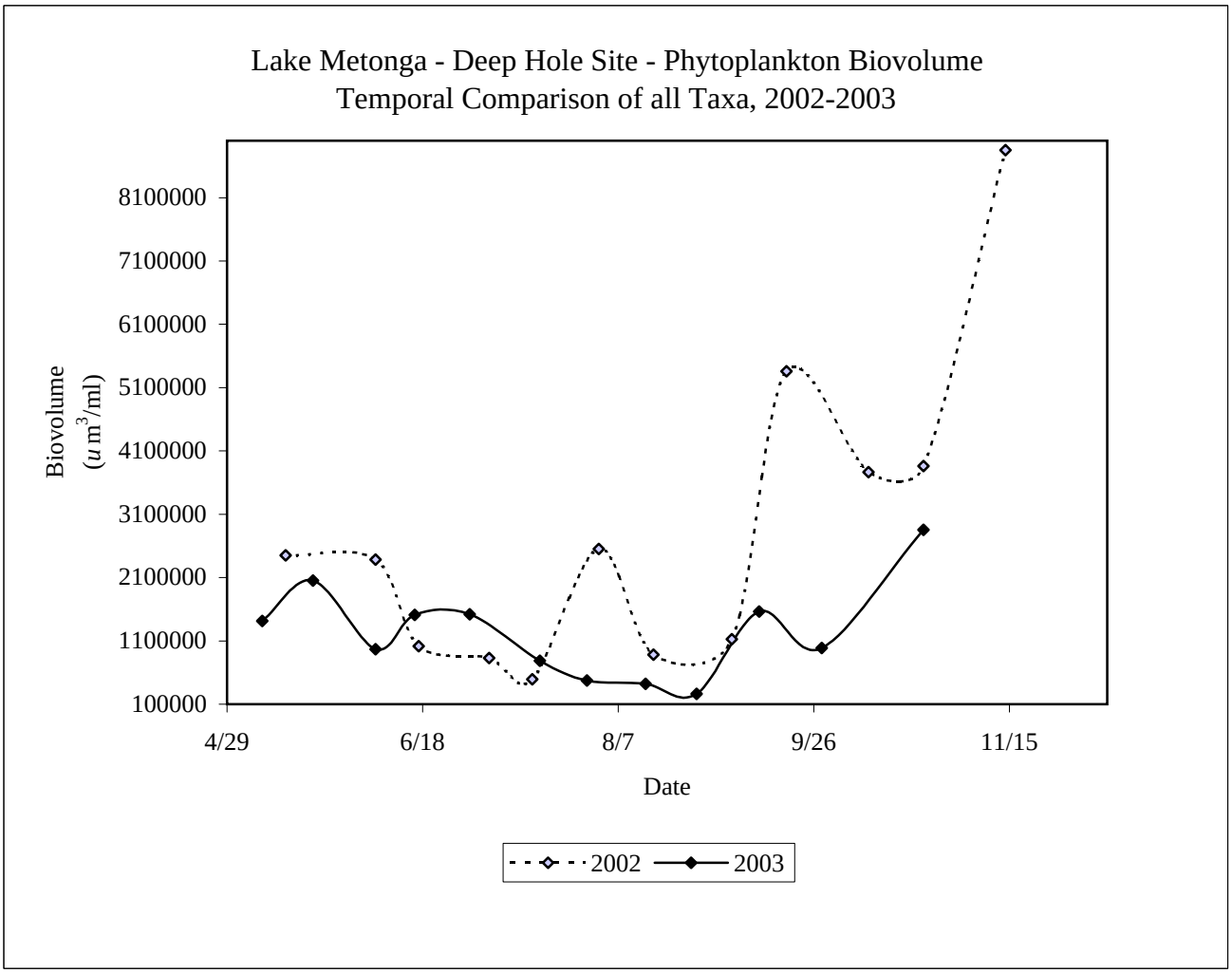
	2002		2003
Date	SR	Date	SR
5/14	24	5/8	21.3
6/6	28	5/21	18
6/17	17	6/6	20.7
7/5	35	6/16	20
7/16	27	6/30	23.3
8/2	24	7/18	23
8/16	35	7/30	31
9/5	29	8/14	22
9/19	24	8/27	20.7
10/10	18	9/12	29
10/24	28	9/28	25
11/14	25	10/24	23
AVG	26.2	AVG	23.1



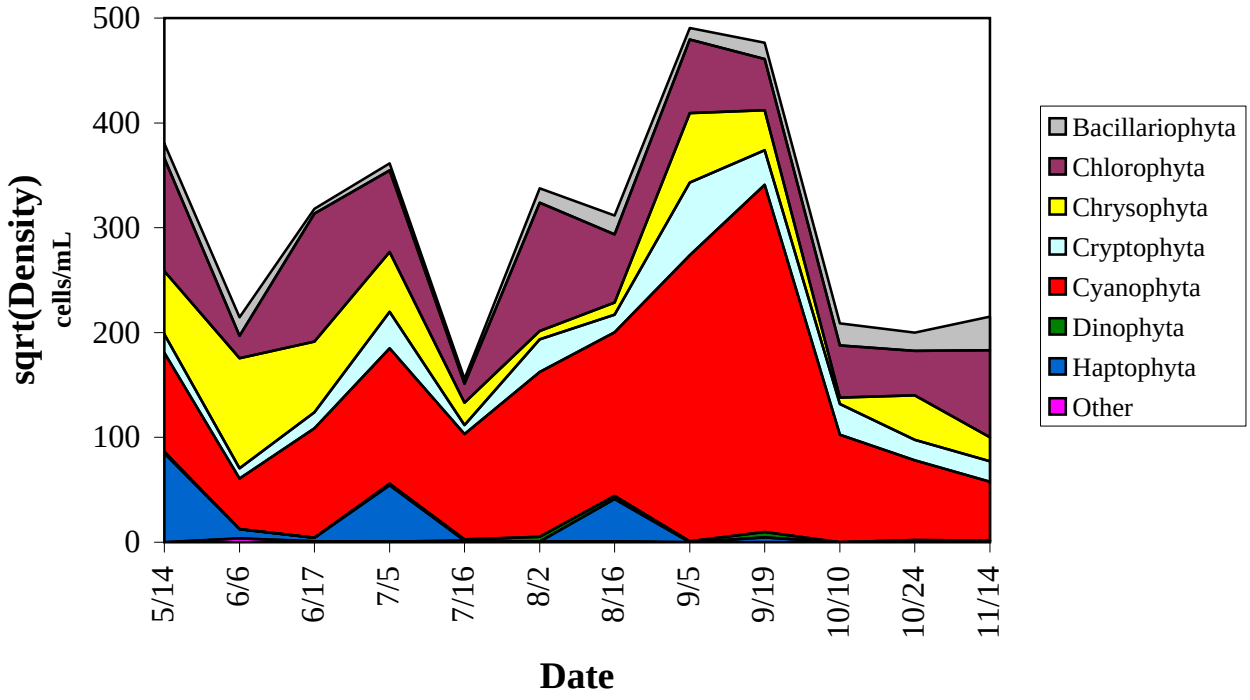
	2002		2003
Date	Density	Date	Density
5/14	31786	5/8	12791
6/6	14297	5/21	7048
6/17	30643	6/6	18123
7/5	30137	6/16	49807
7/16	10969	6/30	79837
8/2	41023	7/18	70316
8/16	30979	7/30	33988
9/5	88678	8/14	53375
9/19	115001	8/27	45486
10/10	14333	9/12	49584
10/24	10334	9/28	15356
11/14	14447	10/24	5233
AVG	36052.3	AVG	36745.3



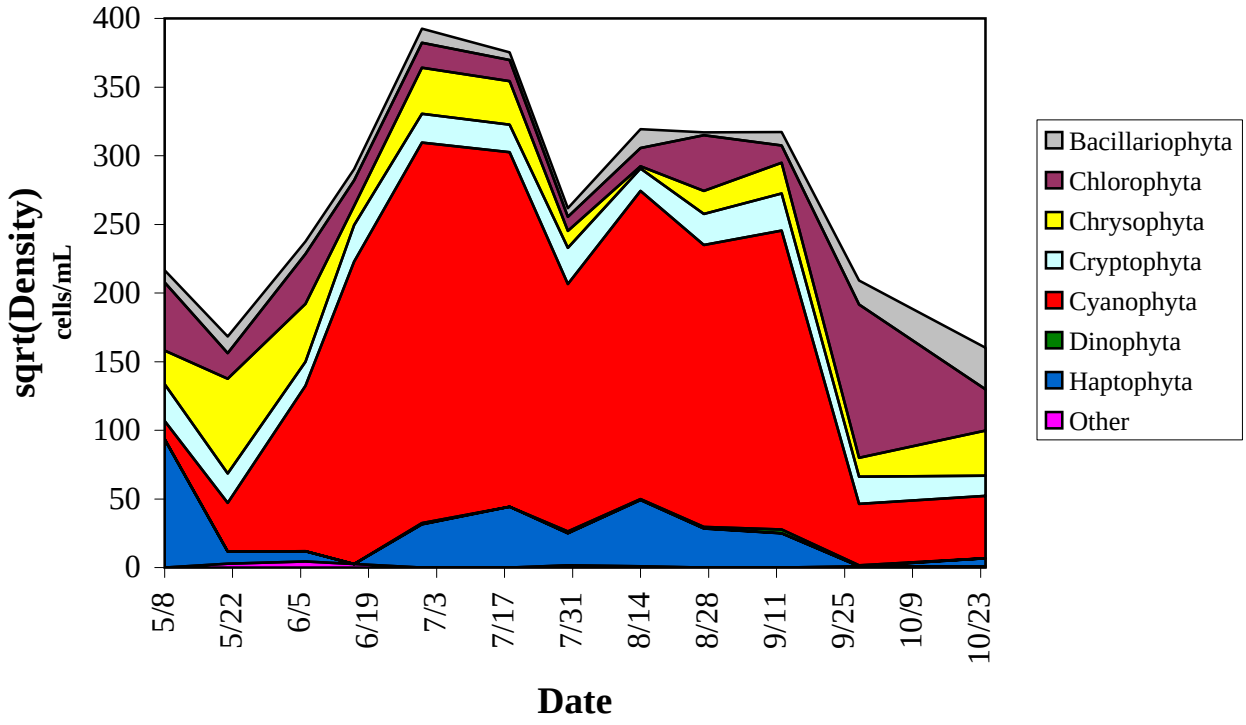
2002		2003	
Date	Biovolume	Date	Biovolume
5/14	2451991	5/8	1412589
6/6	2384873	5/21	2052882
6/17	1015993	6/6	969042
7/5	830787	6/16	1512728
7/16	495587	6/30	1520052
8/2	2551945	7/18	787492
8/16	880666	7/30	476324
9/5	1127911	8/14	419901
9/19	5358575	8/27	262250
10/10	3764497	9/12	1562306
10/24	3863147	9/28	987894
11/14	8849935	10/24	2855038
AVG	2,797,992	AVG	1,234,875

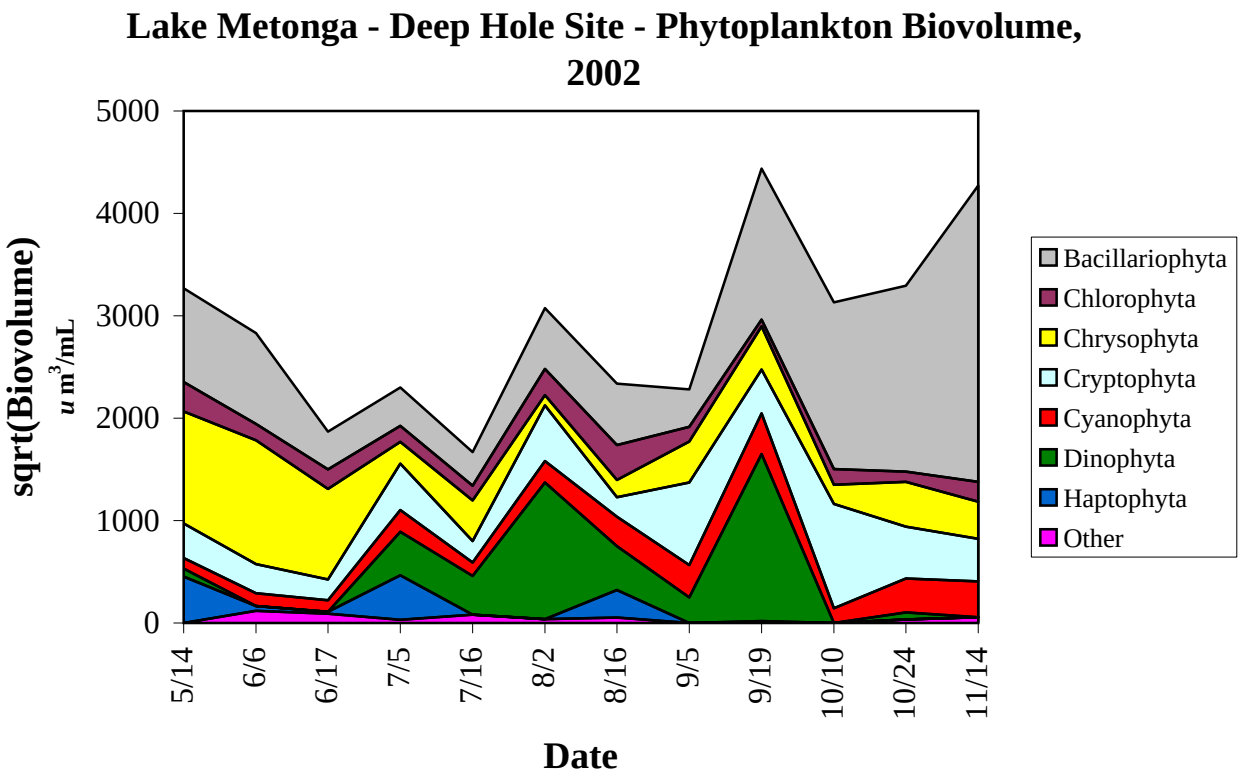


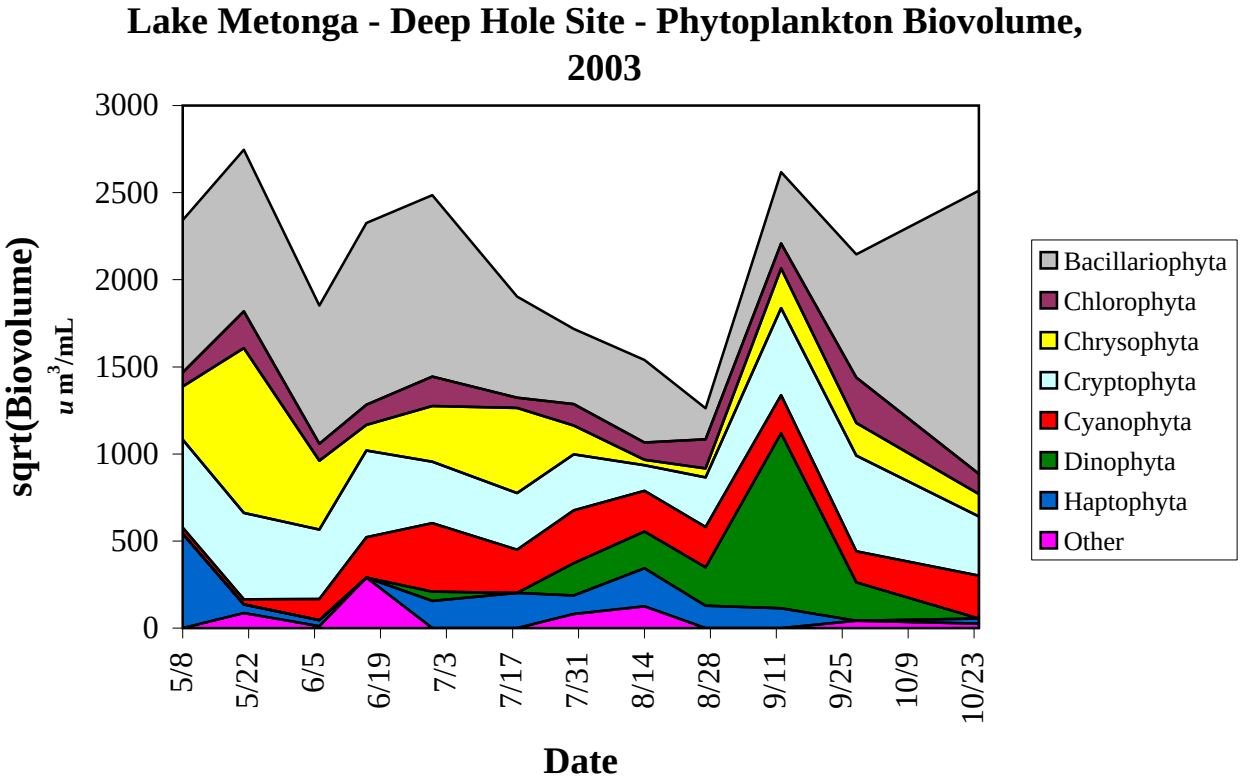
Lake Metonga - Deep Hole Site - Phytoplankton Density, 2002



Lake Metonga - Deep Hole Site - Phytoplankton Density, 2003




Lake Metonga - Deep Hole Site - Phytoplankton Biovolume, 2002
sqrt(Biovolume)
u m3/mL
5000
4000
3000
2000
1000
0
5/14
6/6
6/17
7/5
7/16
8/2
8/16
9/5
9/19
10/10
10/24
11/14
Date
Bacillariophyta
Chlorophyta
Chrysophyta
Cryptophyta
Cyanophyta
Dinophyta
Haptophyta
Other


Lake Metonga - Deep Hole Site - Phytoplankton Biovolume, 2003
sqrt(Biovolume)
u m3/mL
3000
2500
2000
1500
1000
500
0
5/8
5/22
6/5
6/19
7/3
7/17
7/31
8/14
8/28
9/11
9/25
10/9
10/23
Date
Bacillariophyta
Chlorophyta
Chrysophyta
Cryptophyta
Cyanophyta
Dinophyta
Haptophyta
Other

CYANOPHYTA (blue-green algae)	Cyanobacteria
Anabaena catenula var. affinis	Anabaena affinis
Anabaena mendotae	Anabaena flos-aquae var. treleasei
Aphanocapsa conferta	Aphanocapsa elachista var. conferta
Aphanocapsa incerta	Microcystis incerta
Aphanothece minutissima	Aphanothece pulverulenta
Aphanothece smithii	Aphanothece nidulans (planktic populations)
Lyngbya limnetica	Planktolyngbya subtilis, Planktolyngbya limnetica
Microcystis smithii	Aphanocapsa pulchra
Myxobaktron sp.	Dactylococcopsis
Oscillatoria agardhii	Planktothrix agardhii
Oscillatoria limnetica	Pseudanabaena limnetica
Synechococcus sigmoideus	Rhabdoderma sigmoideum
Trichodesmium lacustre	Oscillatoria lacustre
Woronichinia compacta	Gomphosphaeria lacustris var. compacta

BACILLARIOPHYTA (diatoms)	
Aulacoseira ambigua	Melosira ambigua
Aulacoseira granulata var. angustissima	Melosira granulata var. angustissima
Aulacoseira granulata var. granulata	Melosira granulata
Aulacoseira italica	Melosira italica
Aulacoseira subarctica	Melosira italica subsp. Subarctica
Navicula placentula	Placoneis placentula
Punticulata bodanica	Cyclotella bodanica
Synedra acus	Fragilaria ulna var. acus
Synedra cyclopum	Fragilaria cyclopum
Synedra delicatissima	Fragilaria delicatissma
Synedra minuscula	Fragilaria famelica
Synedra rumpens var. familiaris	Fragilaria capucina var. gracilis

CRYPTOPHYTA	
Campylomonas reflexa	Cryptomonas marsonii, Campylomonas marsonii
Campylomonas reflexa	Cryptomonas reflexa
Cryptomonas rostratiformis	Campylomonas rostratiformis
Plagioselmis nannoplanctica	Rhodomonas minuta var. nannoplanctica

DINOPHYTA (dinoflagellates)	Pyrrophyta
Peridiniopsis edax	Glenodinium edax
Peridiniopsis kulczynskii	Peridinium kulczynskii, Glenodinium kulczynskii
Peridiniopsis quadridens	Peridinium quadridens

CHLOROPHYTA (green algae)	
Ankyra judayi	Schroederia judayi
Coenochloris fottii	Eutetramorus fottii
Coenococcus planctonicus	Eutetramorus planctonicus
Crucigeniella apiculata	Crucigenia apiculata
Crucigeniella rectangularis	Crucigenia rectangularis
Lagerheimia ciliata	Chodatella ciliata
Monoraphidium minutum	Selenastrum minutum

Lake Metonga - Deep Hole Site
Zooplankton Data - Abundance
2003

Date	5/8/03	5/8/03	5/8/03	5/21/03	6/6/03	6/6/03	6/6/03	6/16/03	6/16/03	6/30/03	6/30/03
Rep	1	2	3	1	1	2	3	1	1	1	2
CLADOCERA											
Alona affinis (female)		0.0096									
Alona costata (female)							0.0478				
Alonella nana (female)											
Bosmina (S.) liederi (female)		0.0383									
Ceriodaphnia lacustris (female)											
Ceriodaphnia quadrangula (female)											
Chydorus brevilabris (female)											
Chydorus gibbus (female)											
Chydorus sphaericus (female)	0.0143	0.0191			0.0478					0.0377	
Daphnia mendotae (female)									0.0566	0.0189	
Daphnia mendotae (male)											
Daphnia pulicaria (female)	0.3156	0.4782	0.3443	1.4338	2.1518	1.5780	1.3389	0.5096	0.7643	0.2642	0.2359
Daphnia pulicaria (male)					0.0478	0.0478	0.1435	0.0283	0.1415		
Daphnia schodleri	0.0143										
Diaphanosoma birgei (female)			0.0287	0.0551							
Ilyocryptus spinifer (female)											
Leydigia leydigi (female)											
Scapholeberis kingi (female)											
Sida crystallina (female)											
Cladoceran juvenile	0.0287				0.6695						
COPEPODA-Calanoida											
Epischura lacustris (female)						0.0478					
Epischura lacustris (male)											
Skistodiaptomus oregonensis (female)					0.1435	0.0478	0.0478	0.0849	0.0849	0.0189	
Skistodiaptomus oregonensis (male)											
Calanoid nauplius					0.2391		0.0478			0.0189	
Calanoid copepodid				0.0551	0.1435				0.0566	0.0189	
COPEPODA-Cyclopoida											
Acanthocyclops robustus (female)					0.0478						0.0944
Acanthocyclops robustus (male)											
Diacyclops thomasi (female)	0.7747	0.6216	0.4877	1.5441	1.4824	0.8607	0.6216	0.2548	0.2265	0.3586	0.9908
Diacyclops thomasi (male)	0.0287										

Lake Metonga - Deep Hole Site
Zooplankton Data - Abundance
2003

Date	5/8/03	5/8/03	5/8/03	5/21/03	6/6/03	6/6/03	6/6/03	6/16/03	6/16/03	6/30/03	6/30/03
Rep	1	2	3	1	1	2	3	1	1	1	2
Eucyclops agilis (female)											
Eucyclops agilis (male)											
Eucyclops elegans (female)											
Eucyclops elegans (male)											
Macrocyclops albidus (female)											
Macrocyclops albidus (male)											
Mesocyclops edax (female)	0.0861	0.0956	0.1721		0.1435		0.0478		0.0283		
Mesocyclops edax (male)											
Microcyclops rubellus (female)											
Microcyclops rubellus (male)											
Cyclopoid nauplius	2.6109	2.9456	2.0658	10.4778	18.6492	13.9630	18.7927	3.7650	3.2555	2.2836	1.2739
Cyclopoid copepodid	1.1763	1.5206	1.3485	1.8750	2.8213	1.9127	2.9647	2.4628	2.9158	1.5098	0.3774
COPEPODA-Harpacticoida											
Attheyella nordenskioldi (female)											
Attheyella nordenskioldi (male)											
Canthocamptus assimilis (female)											
Canthocamptus assimilis (male)											
Canthocamptus staphylinoides (female)											
Canthocamptus staphylinoides (male)											
Canthocamptus vagus (female)											
Canthocamptus vagus (male)											
Harpacticoid copepodid				0.0551							
Ergasilus chautauquaensis (female)											
Ergasilus chautauquaensis (male)											
COPEPODA-Poecilostomatoida											
Poecilostomatoida copepodid											
ROTIFERA											
Ascomorpha ecaudis											
Ascomorpha ovalis				0.0551							0.7077
Ascomorpha saltans											0.1887
Ascomorpha sp.											
Asplanchna priodonta (female)	2.1805	2.2762	1.9510		0.8129	1.5780	1.8171	0.1699	0.2831	0.5662	0.1887

Lake Metonga - Deep Hole Site
Zooplankton Data - Abundance
2003

Date	5/8/03	5/8/03	5/8/03	5/21/03	6/6/03	6/6/03	6/6/03	6/16/03	6/16/03	6/30/03	6/30/03
Rep	1	2	3	1	1	2	3	1	1	1	2
Asplanchna priodonta (male)											
Bdelloid rotifer					0.0478						
Brachionus quadridentatus	0.0143	0.0287	0.0287								
Cephalodella catellina											
Cephalodella sp.											
Collotheca mutabilis											
Colurella obtusa											
Conochilus natans											
Conochilus unicornis	4.8201	3.8637	4.0454			1.8649	0.6216	0.4246	0.3963	0.5473	1.5098
Conochilus sp.				1.5441							
Euchlanis dilatata											
Euchlanis incisa											
Euchlanis sp.											
Gastropus stylifer											
Hexarthra mira											
Kellicottia longispina	0.0430	0.0096		0.3860	0.2869	0.0478	0.2391	0.0849		0.0566	
Keratella cochlearis			0.0287	0.7169	0.5738	0.2391	0.2869	0.6511	0.6794	0.2453	0.4246
Keratella hiemalis				1.7647	0.1435		0.0478				0.3774
Keratella quadrata	0.1578	0.0383	0.0287	0.0551	2.4387	0.2391	0.3347	0.1982	0.3397	0.2831	
Keratella serrulata		0.0096	0.0287								
Keratella sp.					0.0478						
Lecane (L.) curvicornis											
Lecane (L.) flexilis											
Lecane (L.) ludwigii											
Lecane (L.) luna											
Lecane (M.) bulla											
Lecane (M.) furcata											
Lecane (M.) hamata											
Lecane (M.) lunaris											
Lecane (M.) quadridentata											
Lecane sp.											
Lepadella ovalis											
Lophocharis salpina											
Mytilina ventralis											
Mytilina ventralis brevispina											

Date	5/8/03	5/8/03	5/8/03	5/21/03	6/6/03	6/6/03	6/6/03	6/16/03	6/16/03	6/30/03	6/30/03
Rep	1	2	3	1	1	2	3	1	1	1	2
Mytilina sp.											
Notholca acuminata											
Notholca foliacea											
Notholca squamula	0.0430										
Notholca sp.											
Notommata doneta											
Ploesoma hudsoni											
Ploesoma truncatum											
Ploesoma sp.											
Polyarthra vulgaris	0.0430	0.0096		0.2206		0.1435				0.0566	0.0472
Proales daphnicola											
Proales decipiens											
Proales fallaciosa											
Proales sp.											
Synchaeta lakowitziana											
Synchaeta pectinata				1.8198							
Synchaeta stylata											
Synchaeta sp.	0.0143		0.0861								
Testudinella patina											
Trichocerca capucina multicrinis											
Trichocerca lata											
Trichocerca longiseta											
Trichocerca mucosa											
Trichocerca rousseleti											
Trichocerca sp.											
Trichotria pocillum											
Trichotria tetractis											
Trichotria sp.											
Tylotrocha monopus											
Rotifer 1	0.4304	0.0765	0.1435	0.9375	0.1913	0.4304	0.3825	0.2548	0.3397	0.5473	0.1887
Rotifer 2											
Rotifer 3											

Lake Metonga - Deep Hole Site
Zooplankton Data - Abundance
2003

Date	6/30/03	7/18/03	7/30/03	7/30/03	7/30/03	8/14/03	8/27/03	8/27/03	8/27/03	9/12/03	9/28/03
Rep	3	1	1	2	3	1	1	2	3	1	1
CLADOCERA											
Alona affinis (female)											
Alona costata (female)											
Alonella nana (female)											
Bosmina (S.) liederi (female)		0.0765	0.2831	0.2359	0.3303	0.1887			0.0132		0.0383
Ceriodaphnia lacustris (female)											
Ceriodaphnia quadrangula (female)						0.0472	0.0252		0.0264		
Chydorus brevilabris (female)											
Chydorus gibbus (female)											
Chydorus sphaericus (female)					0.0236	0.0708		0.0108			0.1148
Daphnia mendotae (female)		0.0191	0.0472		0.0236	0.0472	0.1132	0.1402	0.1189	0.2076	0.4591
Daphnia mendotae (male)	0.0692										0.0383
Daphnia pulicaria (female)	0.2076	0.3443	0.3774	0.1180	0.1887	0.1180	0.0881	0.0324	0.1057	0.3208	0.6121
Daphnia pulicaria (male)		0.0191									
Daphnia schodleri											
Diaphanosoma birgei (female)											
Ilyocryptus spinifer (female)											
Leydigia leydigi (female)											
Scapholeberis kingi (female)											
Sida crystallina (female)											
Cladoceran juvenile											
COPEPODA-Calanoida											
Epischura lacustris (female)		0.0956	0.0236	0.0708	0.0708						
Epischura lacustris (male)					0.0708						
Skistodiaptomus oregonensis (female)		0.1148	0.0944	0.1651	0.2359	0.1415	0.0755	0.0863	0.1453	0.2642	0.3060
Skistodiaptomus oregonensis (male)		0.0574		0.0236						0.0566	0.1148
Calanoid nauplius											
Calanoid copepodid	0.0692	0.0383	0.0944	0.1415	0.0708		0.0881	0.0324	0.0925	0.0566	0.3060
COPEPODA-Cyclopoida											
Acanthocyclops robustus (female)		0.0191		0.0236	0.0236		0.0377				
Acanthocyclops robustus (male)											
Diacyclops thomasi (female)	0.7612	0.3252	0.0472	0.0236	0.0708	0.0472	0.0881	0.0647	0.0264	0.2076	0.3825
Diacyclops thomasi (male)				0.0236						0.0189	

Date	6/30/03	7/18/03	7/30/03	7/30/03	7/30/03	8/14/03	8/27/03	8/27/03	8/27/03	9/12/03	9/28/03
Rep	3	1	1	2	3	1	1	2	3	1	1
Eucyclops agilis (female)											
Eucyclops agilis (male)											
Eucyclops elegans (female)											
Eucyclops elegans (male)											
Macrocyclops albidus (female)											
Macrocyclops albidus (male)											
Mesocyclops edax (female)		0.0956	0.2595	0.2123	0.3067	0.2595	0.3900	0.2480	0.3963	0.2642	0.1530
Mesocyclops edax (male)			0.0944	0.2359	0.0472	0.0472		0.0108		0.0377	
Microcyclops rubellus (female)	0.0692										
Microcyclops rubellus (male)											
Cyclopoid nauplius	1.6954	0.3825	2.8073	1.7221	1.8401	1.0852	1.3085	1.0569	1.0701	0.9625	0.9181
Cyclopoid copepodid	1.2110	0.3443	0.7313	0.7549	1.2031	0.7313	0.4655	0.2912	0.5152	0.6039	0.3825
COPEPODA-Harpacticoida											
Attheyella nordenskioldi (female)											
Attheyella nordenskioldi (male)											
Canthocamptus assimilis (female)											
Canthocamptus assimilis (male)											
Canthocamptus staphylinoides (female)											
Canthocamptus staphylinoides (male)											
Canthocamptus vagus (female)											
Canthocamptus vagus (male)											
Harpacticoid copepodid											
Ergasilus chautauquaensis (female)											
Ergasilus chautauquaensis (male)											
COPEPODA-Poecilostomatoida											
Poecilostomatoida copepodid											
ROTIFERA											
Ascomorpha ecaudis											
Ascomorpha ovalis	0.9342	0.0956	0.4954	0.3067	0.5190						
Ascomorpha saltans			0.1415	0.0236	0.0236	0.1651		0.0539	0.0132	0.0377	
Ascomorpha sp.											
Asplanchna priodonta (female)		0.0383	0.0708	0.0472	0.0708						

Lake Metonga - Deep Hole Site
Zooplankton Data - Abundance
2003

Date	6/30/03	7/18/03	7/30/03	7/30/03	7/30/03	8/14/03	8/27/03	8/27/03	8/27/03	9/12/03	9/28/03
Rep	3	1	1	2	3	1	1	2	3	1	1
Asplanchna priodonta (male)											
Bdelloid rotifer											
Brachionus quadridentatus											
Cephalodella catellina											
Cephalodella sp.											
Collotheca mutabilis		0.0191									
Colurella obtusa											
Conochilus natans											
Conochilus unicornis	2.6642	0.0956	2.3355	0.8964	1.4390	3.4442	0.2265				
Conochilus sp.											
Euchlanis dilatata											
Euchlanis incisa											
Euchlanis sp.											
Gastropus stylifer					0.0472						0.2295
Hexarthra mira											
Kellicottia longispina			0.0708	0.0236	0.0472	0.0472		0.0108	0.0132	0.0377	
Keratella cochlearis	0.5536	0.0574	0.0708	0.0236	0.0708	0.1651	0.0377	0.0324	0.0528	0.0189	0.1148
Keratella hiemalis	0.1384	0.0574			0.0236	0.0236	0.0126				0.0383
Keratella quadrata	0.2422		0.0472	0.0236					0.0132		
Keratella serrulata											
Keratella sp.											
Lecane (L.) curvicornis											
Lecane (L.) flexilis											
Lecane (L.) ludwigii											
Lecane (L.) luna											
Lecane (M.) bulla											
Lecane (M.) furcata											
Lecane (M.) hamata											
Lecane (M.) lunaris											
Lecane (M.) quadridentata											
Lecane sp.											
Lepadella ovalis											
Lophocharis salpina											
Mytilina ventralis											
Mytilina ventralis brevispina											

Date	6/30/03	7/18/03	7/30/03	7/30/03	7/30/03	8/14/03	8/27/03	8/27/03	8/27/03	9/12/03	9/28/03
Rep	3	1	1	2	3	1	1	2	3	1	1
Mytilina sp.											
Notholca acuminata											
Notholca foliacea											
Notholca squamula											
Notholca sp.											
Notommata doneta											
Ploesoma hudsoni											
Ploesoma truncatum											
Ploesoma sp.											
Polyarthra vulgaris	0.1038	0.3825	1.2031	1.7221	0.9200					0.1887	3.9020
Proales daphnicola											
Proales decipiens											
Proales fallaciosa											
Proales sp.											
Synchaeta lakowitziana											
Synchaeta pectinata											
Synchaeta stylata											
Synchaeta sp.											
Testudinella patina											
Trichocerca capucina multicrinis											
Trichocerca lata											
Trichocerca longiseta											
Trichocerca mucosa											
Trichocerca rousseleti											
Trichocerca sp.											
Trichotria pocillum											
Trichotria tetractis											
Trichotria sp.											
Tylotrocha monopus											
Rotifer 1	0.1038	0.1721	0.2595	0.2123	0.0472		0.0126				0.0765
Rotifer 2	0.0346	0.1339			0.0236						1.1476
Rotifer 3											0.5738

Lake Metonga - Deep Hole Site
Zooplankton Data - Abundance
2003

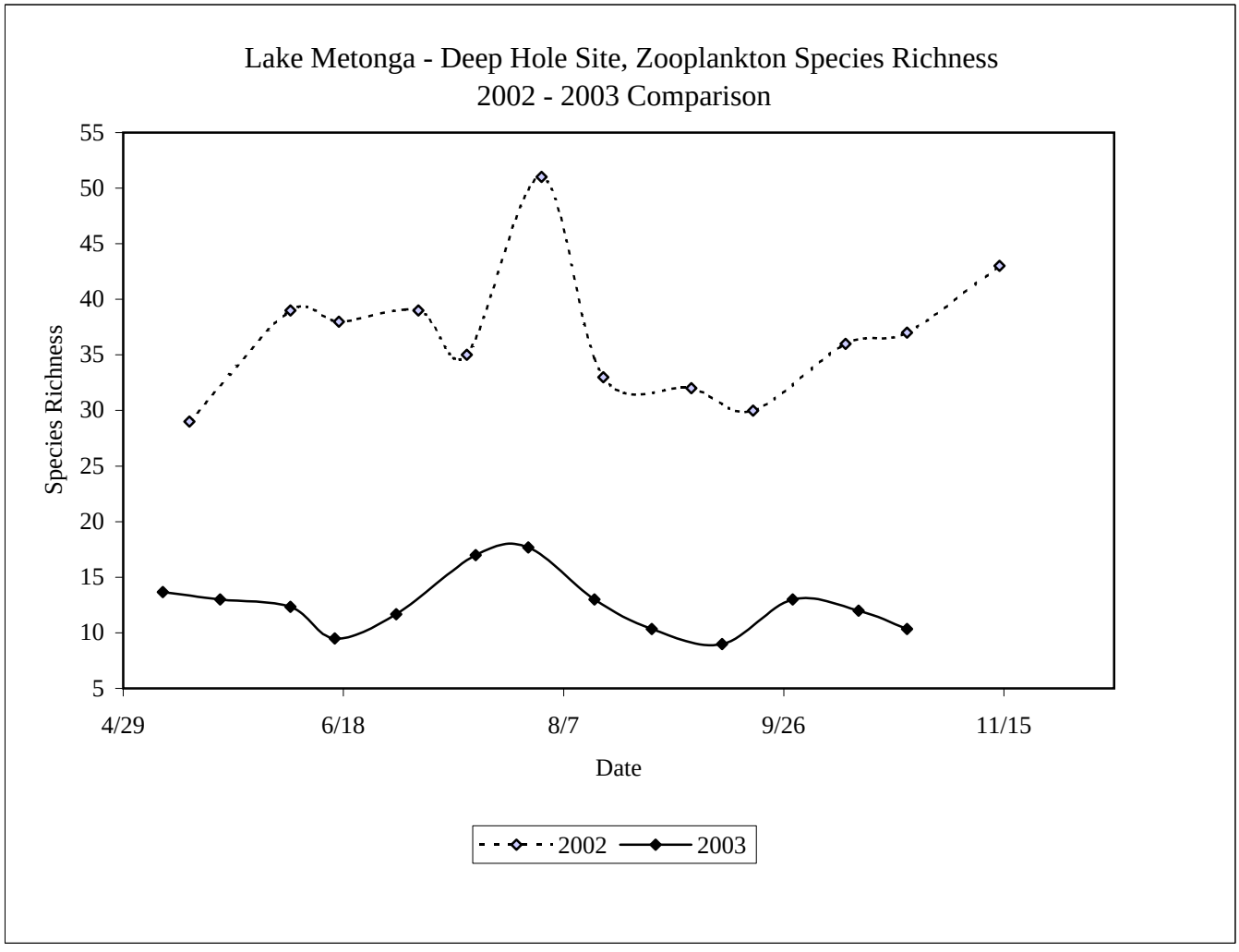
Date	9/28/03	9/28/03	10/13/03	10/24/03	10/24/03	10/24/03
Rep	2	3	1	1	2	3
CLADOCERA						
Alona affinis (female)						
Alona costata (female)						
Alonella nana (female)						
Bosmina (S.) liederi (female)	0.0765		0.1913	0.0969		0.0969
Ceriodaphnia lacustris (female)		0.0383				
Ceriodaphnia quadrangula (female)						
Chydorus brevilabris (female)						
Chydorus gibbus (female)						
Chydorus sphaericus (female)	0.0383	0.0383	0.0956		0.0969	
Daphnia mendotae (female)	0.3060	0.4208	0.4782	0.0969	0.2908	0.1939
Daphnia mendotae (male)						
Daphnia pulicaria (female)	0.9181	1.7215	0.9564	3.1993	1.5512	1.1634
Daphnia pulicaria (male)						
Daphnia schodleri						
Diaphanosoma birgei (female)						
Ilyocryptus spinifer (female)						
Leydigia leydigi (female)						
Scapholeberis kingi (female)						
Sida crystallina (female)						
Cladoceran juvenile						
COPEPODA-Calanoida						
Epischura lacustris (female)				0.0969		
Epischura lacustris (male)						
Skistodiaptomus oregonensis (female)	0.3825	0.3825	0.3825	0.1939	0.0969	0.0969
Skistodiaptomus oregonensis (male)			0.0956		0.0969	
Calanoid nauplius						
Calanoid copepodid	0.6121	0.5356	0.0956	0.0969		
COPEPODA-Cyclopoida						
Acanthocyclops robustus (female)						
Acanthocyclops robustus (male)						
Diacyclops thomasi (female)	0.5356	0.1913	0.4782	0.2908	0.4847	0.2908
Diacyclops thomasi (male)					0.1939	0.3878

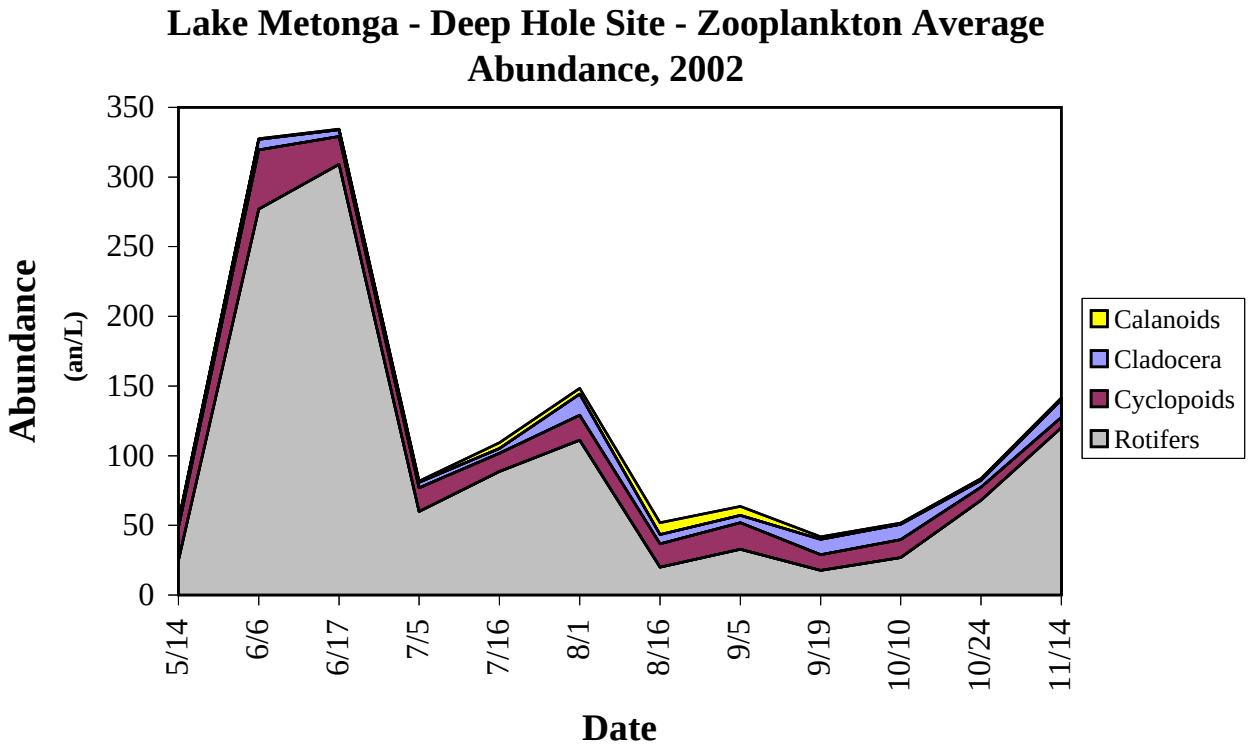
Date	9/28/03	9/28/03	10/13/03	10/24/03	10/24/03	10/24/03
Rep	2	3	1	1	2	3
Eucyclops agilis (female)						
Eucyclops agilis (male)						
Eucyclops elegans (female)						
Eucyclops elegans (male)						
Macrocyclops albidus (female)						
Macrocyclops albidus (male)						
Mesocyclops edax (female)	0.0383	0.0765				
Mesocyclops edax (male)						
Microcyclops rubellus (female)						
Microcyclops rubellus (male)						
Cyclopoid nauplius	0.3825	0.6121	1.0520	1.1634	1.4542	2.0359
Cyclopoid copepodid	0.5356	0.3825	0.1913	0.8725	0.3878	0.8725
COPEPODA-Harpacticoida						
Attheyella nordenskioldi (female)						
Attheyella nordenskioldi (male)						
Canthocamptus assimilis (female)						
Canthocamptus assimilis (male)						
Canthocamptus staphylinoides (female)						
Canthocamptus staphylinoides (male)						
Canthocamptus vagus (female)						
Canthocamptus vagus (male)						
Harpacticoid copepodid						
Ergasilus chautauquaensis (female)						
Ergasilus chautauquaensis (male)						
COPEPODA-Poecilostomatoida						
Poecilostomatoida copepodid						
ROTIFERA						
Ascomorpha ecaudis						
Ascomorpha ovalis						
Ascomorpha saltans						
Ascomorpha sp.						
Asplanchna priodonta (female)	0.0383	0.1148	2.0084	4.0718	5.8168	5.0413

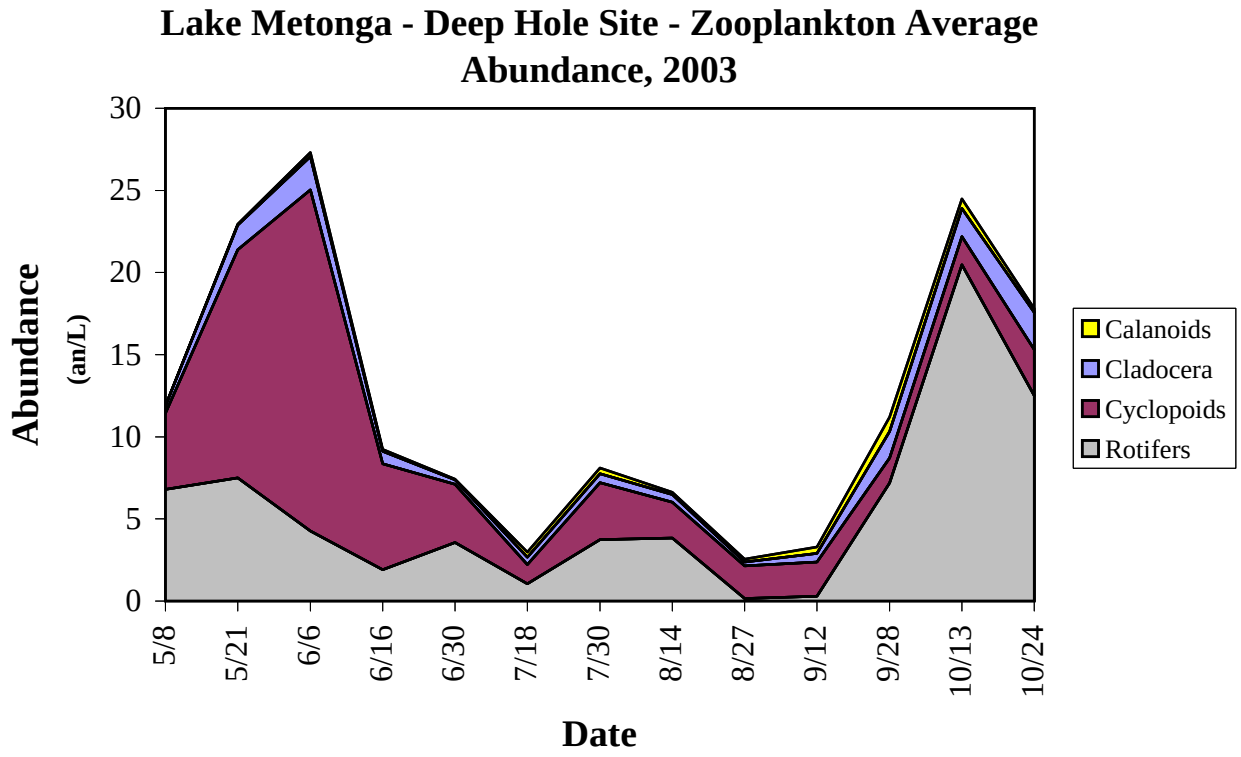
Date	9/28/03	9/28/03	10/13/03	10/24/03	10/24/03	10/24/03
Rep	2	3	1	1	2	3
Asplanchna priodonta (male)						
Bdelloid rotifer						
Brachionus quadridentatus						
Cephalodella catellina						
Cephalodella sp.						
Collotheca mutabilis				0.4847	0.1939	
Colurella obtusa						
Conochilus natans						
Conochilus unicornis						
Conochilus sp.						
Euchlanis dilatata						
Euchlanis incisa						
Euchlanis sp.						
Gastropus stylifer	0.0383	0.1913				
Hexarthra mira						
Kellicottia longispina					0.0969	
Keratella cochlearis	0.0383	0.0765	0.1913		0.0969	0.1939
Keratella hiemalis						
Keratella quadrata			0.0956			
Keratella serrulata						
Keratella sp.						
Lecane (L.) curvicornis						
Lecane (L.) flexilis						
Lecane (L.) ludwigii						
Lecane (L.) luna						
Lecane (M.) bulla						
Lecane (M.) furcata						
Lecane (M.) hamata						
Lecane (M.) lunaris						
Lecane (M.) quadridentata						
Lecane sp.						
Lepadella ovalis						
Lophocharis salpina						
Mytilina ventralis						
Mytilina ventralis brevispina						

Date	9/28/03	9/28/03	10/13/03	10/24/03	10/24/03	10/24/03
Rep	2	3	1	1	2	3
Mytilina sp.						
Notholca acuminata						
Notholca foliacea						
Notholca squamula						
Notholca sp.						
Notommata doneta						
Ploesoma hudsoni						
Ploesoma truncatum						
Ploesoma sp.						
Polyarthra vulgaris	2.5248	10.6348	17.0234	3.1993	8.2405	7.5619
Proales daphnicola						
Proales decipiens						
Proales fallaciosa						
Proales sp.						
Synchaeta lakowitziana						
Synchaeta pectinata			0.5738			
Synchaeta stylata						
Synchaeta sp.						
Testudinella patina						
Trichocerca capucina multicrinis						
Trichocerca lata						
Trichocerca longiseta						
Trichocerca mucosa						
Trichocerca rousseleti						
Trichocerca sp.						
Trichotria pocillum						
Trichotria tetractis						
Trichotria sp.						
Tylotrocha monopus						
Rotifer 1			0.5738	0.6786	0.7756	0.9695
Rotifer 2	0.9181	0.7651				0.0969
Rotifer 3	0.1148					

	2002		2003
Date	SR	Date	SR
5/14	29	5/8	13.7
6/6	39	5/21	13.0
6/17	38	6/6	12.3
7/5	39	6/16	9.5
7/16	35	6/30	11.7
8/2	51	7/18	17.0
8/16	33	7/30	17.7
9/5	32	8/14	13.0
9/19	30	8/27	10.3
10/10	36	9/12	9.0
10/24	37	9/28	13.0
11/14	43	10/13	12.0
		10/24	10.3
AVG	36.8	AVG	12.5

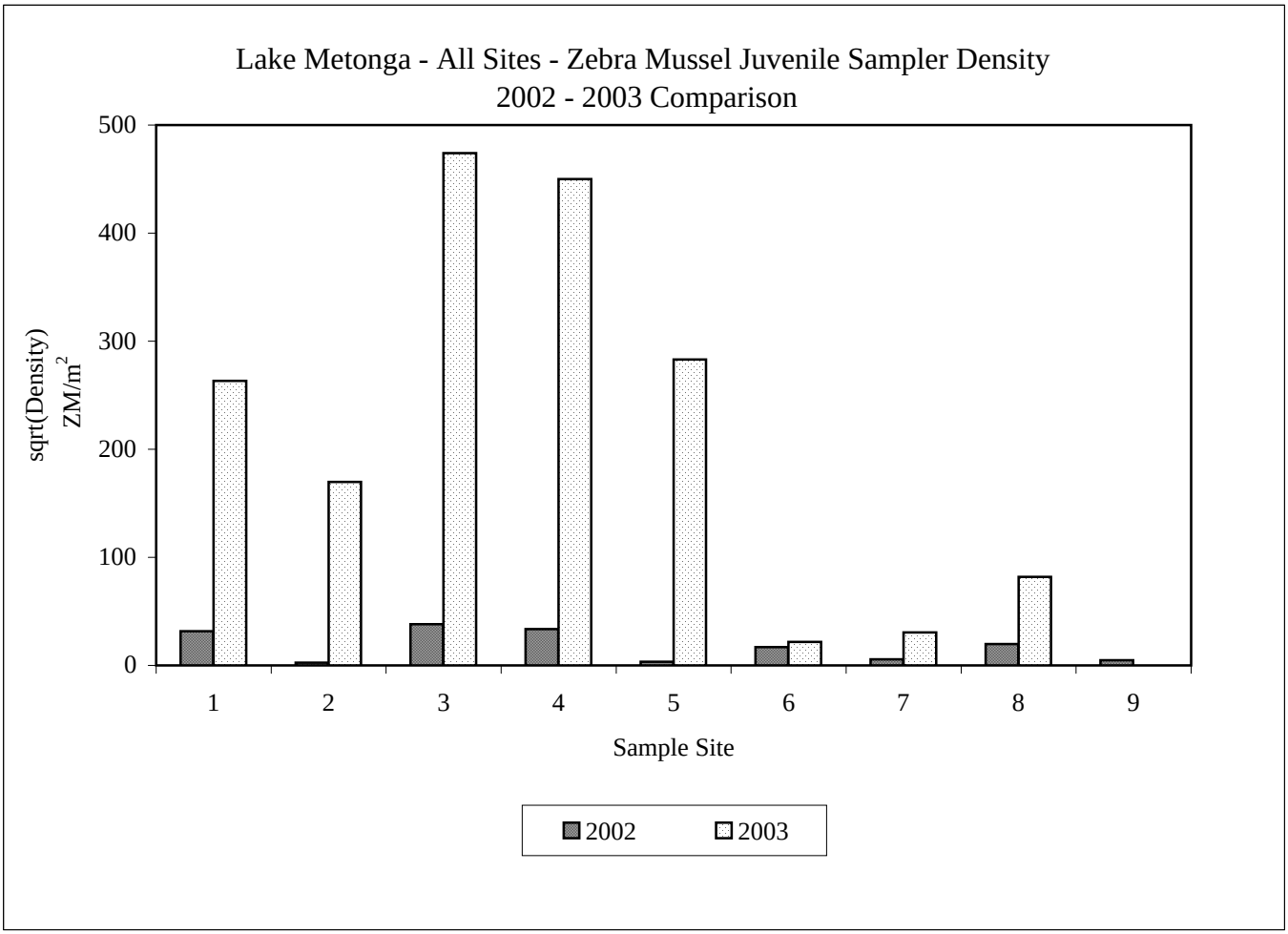



Lake Metonga - Deep Hole Site - Zooplankton Average Abundance, 2002
Abundance (an/L)
350
300
250
200
150
100
50
0
5/14
6/6
6/17
7/5
7/16
8/1
8/16
9/5
9/19
10/10
10/24
11/14
Date
Calanoids
Cladocera
Cyclopoids
Rotifers


Lake Metonga - Deep Hole Site - Zooplankton Average Abundance, 2003
Abundance (an/L)
30
25
20
15
10
5
0
5/8
5/21
6/6
6/16
6/30
7/18
7/30
8/14
8/27
9/12
9/28
10/13
10/24
Date
Calanoids
Cladocera
Cyclopoids
Rotifers

Sites	2002 Density*	2003 Density*
1	999	69283
2	7	28836
3	1451	224757
4	1126	202555
5	11	80143
6	290	476
7	31	928
8	388	6702
9	22	***
AVG	480	76710
10**	0	0

*Density=ZM/m2
**10 = Outlet Creek Site
*** Was not found



Site 1A

Sample#	Depth (ft)	% Silt	ZM #	% Sand	ZM #	% Gravel	ZM #	% Cobble	ZM #	% Boulder	ZM #	Total	Density
1	9	0	0	70	0	5	0	25	3	0	0	3	12
2	9	0	0	65	0	25	2	10	0	0	0	2	8
3	8	0	0	80	0	15	4	5	5	0	0	9	36
4	8	0	0	65	0	20	3	15	3	0	0	6	24
5	8	0	0	70	0	10	1	15	4	5	11	16	64
6	8	0	0	80	0	20	6	0	0	0	0	6	24
7	7	0	0	90	0	5	0	5	0	0	0	0	0
8	7	0	0	60	0	40	7	0	0	0	0	7	28
9	7	0	0	80	0	20	2	0	0	0	0	2	8
10	7	0	0	70	0	30	2	0	0	0	0	2	8
11	7	0	0	45	0	50	2	5	1	0	0	3	12
12	7	0	0	25	0	70	1	5	0	0	0	1	4
13	6	0	0	50	0	50	0	0	0	0	0	0	0
14	6	0	0	40	0	55	7	5	0	0	0	7	28
15	6	0	0	20	0	55	0	25	2	0	0	2	8
16	6	0	0	30	0	50	4	20	1	0	0	5	20
17	6	0	0	30	0	60	4	10	1	0	0	5	20
18	6	0	0	25	0	40	0	10	2	25	9	11	44
19	4	0	0	30	0	50	0	0	0	20	0	0	0
20	4	0	0	60	0	40	2	0	0	0	0	2	8
Total			0		0		47		22		20	89	
Average	6.8	0.0	0.0	54.3	0.0	35.5	2.4	7.8	1.1	2.5	1.0	4.5	17.8
Average/Sub			0.0		0.0		0.0		0.7		1.5		

ZM Total	89
ZM Avg Density by (ZM/m2)	17.8
ZM Highest Density (ZM/m2)	64

*Zebra mussel density average per substrate type (ZM/m^2)

Site 1B

Sample#	Depth (ft)	% Silt	ZM #	% Sand	ZM #	% Gravel	ZM #	% Cobble	ZM #	% Boulder	ZM #	Total	Density
1	27	0	0	50	0	50	6	0	0	0	0	6	24
2	20	0	0	50	0	50	7	0	0	0	0	7	28
3	24	0	0	40	0	60	24	0	0	0	0	24	96
4	23	0	0	50	0	50	28	0	0	0	0	28	112
5	23	0	0	60	0	40	18	0	0	0	0	18	72
6	10	0	0	75	0	15	11	10	7	0	0	18	72
7	19	0	0	60	0	30	14	10	6	0	0	20	80
8	18	0	0	75	0	20	12	5	4	0	0	16	64
9	17	0	0	80	0	20	3	0	0	0	0	3	12
10	17	0	0	80	0	20	3	0	0	0	0	3	12
11	15	0	0	40	0	10	18	30	3	20	20	41	164
12	15	0	0	75	0	20	10	5	5	0	0	15	60
13	14	0	0	5	0	90	5	5	0	0	0	5	20
14	13	0	0	5	0	85	4	10	5	0	0	9	36
15	13	0	0	10	0	65	2	25	0	0	0	2	8
16	12	0	0	5	0	5	1	5	2	85	36	39	156
17	10	0	0	45	0	30	0	0	0	25	0	0	0
18	9	0	0	45	0	5	0	10	0	40	17	17	68
19	9	0	0	5	0	35	0	20	3	40	2	5	20
20	8	0	0	10	0	40	0	15	2	35	2	4	16
Total			0		0		166		37		77	280	
Average	15.8	0.0	0.0	43.3	0.0	37.0	8.3	7.5	1.9	12.3	3.9	14.0	56
Average/Sub*			0.0		0.0		0.0		0.7		1.5		

ZM Total	280
ZM Avg Density by (ZM/m2)	56
ZM Highest Density (ZM/m2)	164

*Zebra mussel density average per substrate type (ZM/m^2)

Site 2A

Sample#	Depth (ft)	% Silt	ZM #	% Sand	ZM #	% Gravel	ZM #	% Cobble	ZM #	% Boulder	ZM #	Total	Density
1	7	0	0	0	0	55	10	25	4	20	3	17	68
2	7	0	0	10	0	20	1	20	7	50	0	8	32
3	6	0	0	70	0	5	1	15	0	10	1	2	8
4	6	0	0	80	0	10	0	0	0	10	0	0	0
5	6	0	0	65	0	5	1	30	4	0	0	5	20
6	5	0	0	25	0	70	0	5	0	0	0	0	0
7	5	0	0	20	0	30	0	25	3	25	3	6	24
8	4	0	0	45	0	50	1	5	1	0	0	2	8
9	4	0	0	30	0	50	1	20	2	0	0	3	12
10	4	0	0	45	0	50	0	5	0	0	0	0	0
11	4	0	0	50	0	30	2	20	2	0	0	4	16
12	4	0	0	50	0	25	1	25	2	0	0	3	12
13	4	0	0	55	0	20	1	25	0	0	0	1	4
14	4	0	0	70	0	30	0	0	0	0	0	0	0
15	4	0	0	70	0	30	0	0	0	0	0	0	0
16	4	0	0	60	0	40	0	0	0	0	0	0	0
17	4	0	0	60	0	40	0	0	0	0	0	0	0
18	4	0	0	80	0	20	0	0	0	0	0	0	0
19	4	0	0	80	0	20	0	0	0	0	0	0	0
20	4	0	0	80	0	20	0	0	0	0	0	0	0
Total			0		0		19		25		7	51	
Average	4.7	0.0	0.0	52.3	0.0	31.0	1.0	11.0	1.3	5.8	0.4	2.6	10.2
Average/Sub*			0.0		0.0		0.0		0.7		1.5		

ZM Total	51
ZM Avg Density by (ZM/m2)	10.2
ZM Highest Density (ZM/m2)	68

*Zebra mussel density average per substrate type (ZM/m^2)

Site 2B

Sample#	Depth (ft)	% Silt	ZM #	% Sand	ZM #	% Gravel	ZM #	% Cobble	ZM #	% Boulder	ZM #	Total	Density
1	22	0	0	50	0	50	0	0	0	0	0	0	0
2	21	0	0	50	0	40	0	10	0	0	0	0	0
3	20	0	0	50	0	30	1	20	4	0	0	5	20
4	19	0	0	50	0	30	4	20	5	0	0	9	36
5	18	0	0	55	0	20	1	25	1	0	0	2	8
6	16	0	0	60	0	40	0	0	0	0	0	0	0
7	16	0	0	50	0	20	0	5	1	25	3	4	16
8	14	0	0	60	0	25	0	15	0	0	0	0	0
9	13	0	0	60	0	0	0	10	4	30	3	7	28
10	13	0	0	55	0	25	1	20	0	0	0	1	4
11	13	0	0	55	0	15	1	10	0	20	3	4	16
12	11	0	0	10	0	40	3	20	2	30	8	13	52
13	11	0	0	10	0	55	3	25	14	10	2	19	76
14	10	0	0	30	0	65	0	5	1	0	0	1	4
15	10	0	0	50	0	40	0	10	2	0	0	2	8
16	10	0	0	25	0	15	0	20	2	40	3	5	20
17	9	0	0	30	0	30	1	10	64	30	7	72	288
18	8	0	0	50	0	25	0	0	0	25	4	4	16
19	7	0	0	0	0	0	0	0	0	100	7	7	28
20	7	0	0	0	0	40	6	30	15	30	15	36	144
Total			0		0		21		115		55	191	
Average	13.4	0.0	0.0	40.0	0.0	30.3	1.1	12.8	5.8	17.0	2.8	9.6	38.2
Average/Sub*			0.0		0.0		0.0		0.7		1.5		

ZM Total	191
ZM Avg Density by (ZM/m2)	38.2
ZM Highest Density (ZM/m2)	288

*Zebra mussel density average per substrate type (ZM/m^2)

Site 3A

Sample#	Depth (ft)	% Silt	ZM #	% Sand	ZM #	% Gravel	ZM #	% Cobble	ZM #	% Boulder	ZM #	Total	Density
1	5	0	0	77	0	20	0	3	2	0	0	2	8
2	5	0	0	77	0	20	0	3	2	0	0	2	8
3	5	0	0	35	0	50	0	15	1	0	0	1	4
4	5	0	0	80	0	20	0	0	0	0	0	0	0
5	5	0	0	80	0	20	1	0	0	0	0	1	4
6	5	0	0	90	0	10	0	0	0	0	0	0	0
7	5	0	0	90	0	10	0	0	0	0	0	0	0
8	5	0	0	90	0	10	0	0	0	0	0	0	0
9	4	0	0	90	0	10	0	0	0	0	0	0	0
10	4	0	0	80	0	20	0	0	0	0	0	0	0
11	4	0	0	90	0	10	0	0	0	0	0	0	0
12	4	0	0	30	0	65	1	5	4	0	0	5	20
13	4	0	0	30	0	60	0	10	1	0	0	1	4
14	3	0	0	30	0	40	1	30	3	0	0	4	16
15	3	0	0	10	0	30	0	30	1	30	3	4	16
16	3	0	0	10	0	90	0	0	0	0	0	0	0
17	3	0	0	20	0	10	0	70	0	0	0	0	0
18	2	0	0	20	0	20	0	60	3	0	0	3	12
19	2	0	0	0	0	30	1	70	4	0	0	5	20
20	2	0	0	0	0	50	0	50	3	0	0	3	12
Total			0		0		4		24		3	31	
Average	3.9	0.0	0.0	51.5	0.0	29.8	0.2	17.3	1.2	1.5	0.2	1.6	6.2
Average/Sub*			0.0		0.0		0.0		0.7		1.5		

ZM Total	31
ZM Avg Density by (ZM/m2)	6.2
ZM Highest Density (ZM/m2)	20

*Zebra mussel density average per substrate type (ZM/m^2)

Site 3B

Sample#	Depth (ft)	% Silt	ZM #	% Sand	ZM #	% Gravel	ZM #	% Cobble	ZM #	% Boulder	ZM #	Total	Density
1	15	0	0	80	0	15	1	5	20	0	0	21	84
2	15	0	0	60	0	10	0	30	4	0	0	4	16
3	15	0	0	80	0	15	2	5	12	0	0	14	56
4	15	0	0	70	0	30	3	0	0	0	0	3	12
5	15	0	0	55	0	40	40	5	9	0	0	49	196
6	15	0	0	75	0	20	0	5	20	0	0	20	80
7	15	0	0	50	0	50	7	0	0	0	0	7	28
8	15	0	0	60	0	40	28	0	0	0	0	28	112
9	15	0	0	75	0	15	1	10	8	0	0	9	36
10	16	0	0	45	0	30	10	25	21	0	0	31	124
11	16	0	0	65	0	20	6	15	22	0	0	28	112
12	16	0	0	20	0	60	18	20	25	0	0	43	172
13	16	0	0	50	0	30	5	20	1	0	0	6	24
14	16	0	0	30	0	45	4	25	3	0	0	7	28
15	16	0	0	10	0	65	8	25	15	0	0	23	92
16	16	0	0	20	0	55	12	25	11	0	0	23	92
17	16	0	0	30	0	65	12	5	4	0	0	16	64
18	16	0	0	30	0	65	1	5	3	0	0	4	16
19	16	0	0	20	0	55	5	25	12	0	0	17	68
20	16	0	0	20	0	40	13	40	58	0	0	71	284
Total			0		0		176		248		0	424	
Average	15.6	0.0	0.0	47.3	0.0	38.3	8.8	14.5	12.4	0.0	0.0	21.2	84.8
Average/Sub*			0.0		0.0		0.0		0.7		1.5		

ZM Total	424
ZM Avg Density by (ZM/m2)	84.8
ZM Highest Density (ZM/m2)	284

*Zebra mussel density average per substrate type (ZM/m^2)

Site 4A

Sample#	Depth (ft)	% Silt	ZM #	% Sand	ZM #	% Gravel	ZM #	% Cobble	ZM #	% Boulder	ZM #	Total	Density
1	2	0	0	5	0	15	3	80	9	0	0	12	48
2	2	0	0	5	0	55	1	40	1	0	0	2	8
3	2	0	0	15	0	75	1	10	7	0	0	8	32
4	2	0	0	5	0	45	5	50	5	0	0	10	40
5	2	0	0	55	0	40	1	5	0	0	0	1	4
6	2	0	0	5	0	45	0	50	4	0	0	4	16
7	2	0	0	0	0	50	0	50	2	0	0	2	8
8	2	0	0	15	0	75	0	10	0	0	0	0	0
9	2	0	0	0	0	40	2	60	4	0	0	6	24
10	2	0	0	0	0	50	5	50	9	0	0	14	56
11	2	0	0	0	0	20	0	80	6	0	0	6	24
12	3	0	0	60	0	10	1	30	2	0	0	3	12
13	3	0	0	5	0	90	0	5	0	0	0	0	0
14	3	0	0	0	0	95	0	5	0	0	0	0	0
15	3	0	0	5	0	55	1	40	3	0	0	4	16
16	3	0	0	10	0	60	0	30	7	0	0	7	28
17	3	0	0	5	0	90	2	5	1	0	0	3	12
18	3	0	0	5	0	35	2	60	4	0	0	6	24
19	3	0	0	5	0	25	3	70	4	0	0	7	28
20	3	0	0	10	0	60	1	30	0	0	0	1	4
Total			0		0		28		68		0	96	
Average	2.5	0.0	0.0	10.5	0.0	51.5	1.4	38.0	3.4	0.0	0.0	4.8	19.2
Average/Sub*			0.0		0.0		0.0		0.7		1.5		

ZM Total	96
ZM Avg Density by (ZM/m2)	19.2
ZM Highest Density (ZM/m2)	56

*Zebra mussel density average per substrate type (ZM/m^2)

Site 4B

Sample#	Depth (ft)	% Silt	ZM #	% Sand	ZM #	% Gravel	ZM #	% Cobble	ZM #	% Boulder	ZM #	Total	Density
1	6	0	0	15	0	80	2	5	0	0	0	2	8
2	6	0	0	30	0	70	11	0	1	0	0	12	48
3	7	0	0	20	0	60	4	20	3	0	0	7	28
4	7	0	0	35	0	60	3	5	1	0	0	4	16
5	7	0	0	30	0	70	0	0	0	0	0	0	0
6	7	0	0	40	0	35	0	25	0	0	0	0	0
7	7	0	0	40	0	50	3	10	5	0	0	8	32
8	7	0	0	25	0	70	0	5	1	0	0	1	4
9	7	0	0	45	0	50	1	5	0	0	0	1	4
10	7	0	0	35	0	60	0	5	6	0	0	6	24
11	8	0	0	40	0	60	3	0	0	0	0	3	12
12	8	0	0	30	0	70	5	0	0	0	0	5	20
13	8	0	0	60	0	40	0	0	0	0	0	0	0
14	8	0	0	60	0	25	0	5	4	10	3	7	28
15	8	0	0	80	0	5	0	15	4	0	0	4	16
16	8	0	0	80	0	10	0	10	6	0	0	6	24
17	8	0	0	50	0	50	1	0	0	0	0	1	4
18	8	0	0	40	0	35	1	0	0	25	6	7	28
19	9	0	0	45	0	55	2	0	0	0	0	2	8
20	9	0	0	15	0	80	3	5	4	0	0	7	28
Total			0		0		39		35		9	83	
Average	7.5	0.0	0.0	40.8	0.0	51.8	2.0	5.8	1.8	1.8	0.5	4.2	16.6
Average/Sub*			0.0		0.0		0.0		0.7		1.5		

ZM Total	83
ZM Avg Density by (ZM/m2)	16.6
ZM Highest Density (ZM/m2)	48

*Zebra mussel density average per substrate type (ZM/m^2)

Site 5A

Sample#	Depth (ft)	% Silt	ZM #	% Sand	ZM #	% Gravel	ZM #	% Cobble	ZM #	% Boulder	ZM #	Total	Density
1	9	0	0	70	0	30	0	0	0	0	0	0	0
2	9	0	0	80	0	20	2	0	0	0	0	2	8
3	8	0	0	90	0	10	1	0	0	0	0	1	4
4	8	0	0	90	0	10	0	0	0	0	0	0	0
5	7	0	0	75	0	25	1	0	0	0	0	1	4
6	7	0	0	60	0	40	2	0	0	0	0	2	8
7	7	0	0	60	0	40	8	0	0	0	0	8	32
8	6	0	0	75	0	25	0	0	0	0	0	0	0
9	6	0	0	15	0	10	0	75	17	0	0	17	68
10	5	0	0	60	0	10	8	30	15	0	0	23	92
11	5	0	0	85	0	15	1	0	0	0	0	1	4
12	4	0	0	10	0	10	0	80	28	0	0	28	112
13	3	0	0	5	0	5	5	90	51	0	0	56	224
14	2	0	0	10	0	55	9	35	17	0	0	26	104
15	2	0	0	5	0	5	3	90	11	0	0	14	56
16	2	0	0	10	0	20	17	70	11	0	0	28	112
17	2	0	0	0	0	30	11	70	10	0	0	21	84
18	2	0	0	20	0	65	8	15	12	0	0	20	80
19	3	0	0	5	0	45	0	50	54	0	0	54	216
20	3	0	0	5	0	55	3	40	34	0	0	37	148
Total			0		0		79		260		0	339	
Average	5.0	0.0	0.0	41.5	0.0	26.3	4.0	32.3	13.0	0.0	0.0	17.0	67.8
Average/Sub*			0.0		0.0		0.0		0.7		1.5		

ZM Total	339
ZM Avg Density by (ZM/m2)	67.8
ZM Highest Density (ZM/m2)	224

*Zebra mussel density average per substrate type (ZM/m^2)

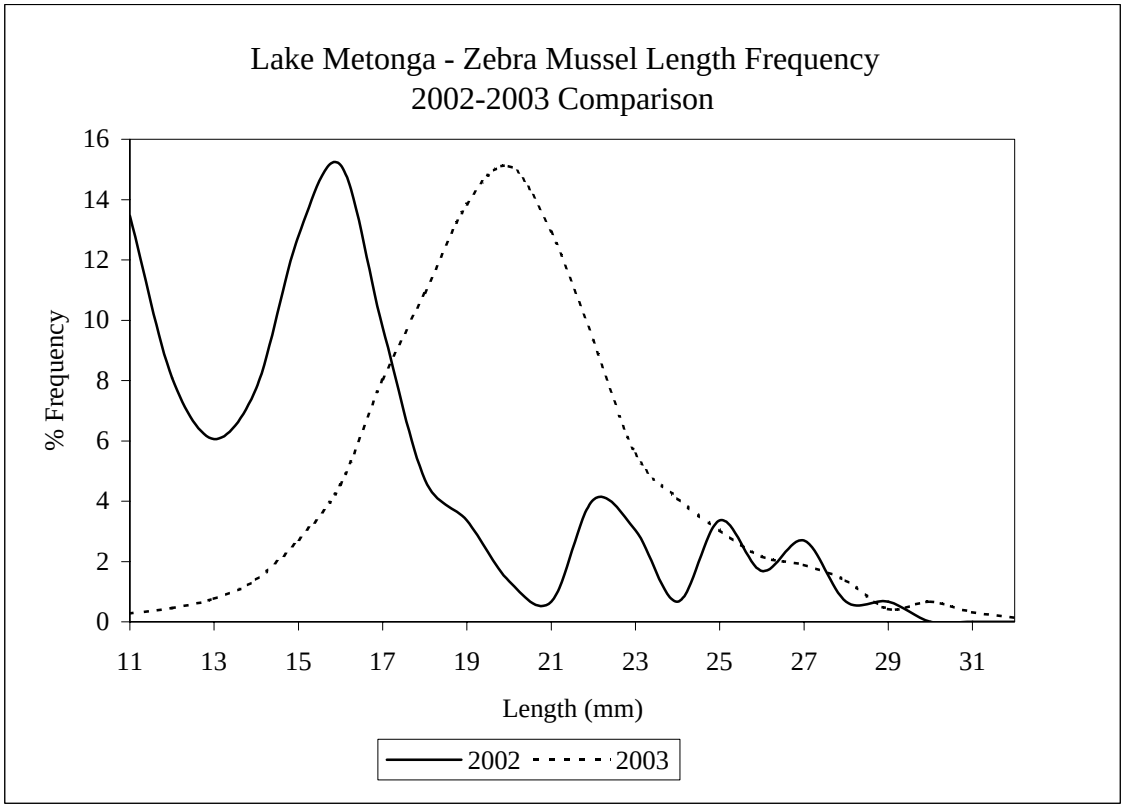
Site 5B

Sample#	Depth (ft)	% Silt	ZM #	% Sand	ZM #	% Gravel	ZM #	% Cobble	ZM #	% Boulder	ZM #	Total	Density
1	15	0	0	95	0	5	0	0	0	0	0	0	0
2	15	0	0	95	0	5	0	0	0	0	0	0	0
3	15	0	0	95	0	5	0	0	0	0	0	0	0
4	14	0	0	100	0	0	0	0	0	0	0	0	0
5	14	0	0	100	0	0	0	0	0	0	0	0	0
6	14	0	0	100	0	0	0	0	0	0	0	0	0
7	14	0	0	100	0	0	0	0	0	0	0	0	0
8	14	0	0	100	2	0	0	0	0	0	0	2	8
9	13	0	0	100	0	0	0	0	0	0	0	0	0
10	13	0	0	100	0	0	0	0	0	0	0	0	0
11	13	0	0	100	0	0	0	0	0	0	0	0	0
12	13	0	0	100	0	0	0	0	0	0	0	0	0
13	13	0	0	100	0	0	0	0	0	0	0	0	0
14	13	0	0	100	0	0	0	0	0	0	0	0	0
15	13	0	0	100	0	0	0	0	0	0	0	0	0
16	13	0	0	100	0	0	0	0	0	0	0	0	0
17	13	0	0	100	0	0	0	0	0	0	0	0	0
18	13	0	0	100	0	0	0	0	0	0	0	0	0
19	13	0	0	100	0	0	0	0	0	0	0	0	0
20	13	0	0	100	0	0	0	0	0	0	0	0	0
Total			0		2		0		0		0	2	
Average	13.6	0.0	0.0	99.3	0.1	0.8	0.0	0.0	0.0	0.0	0.0	0.1	0.4
Average/Sub*			0.0		0.0		0.0		0.7		1.5		

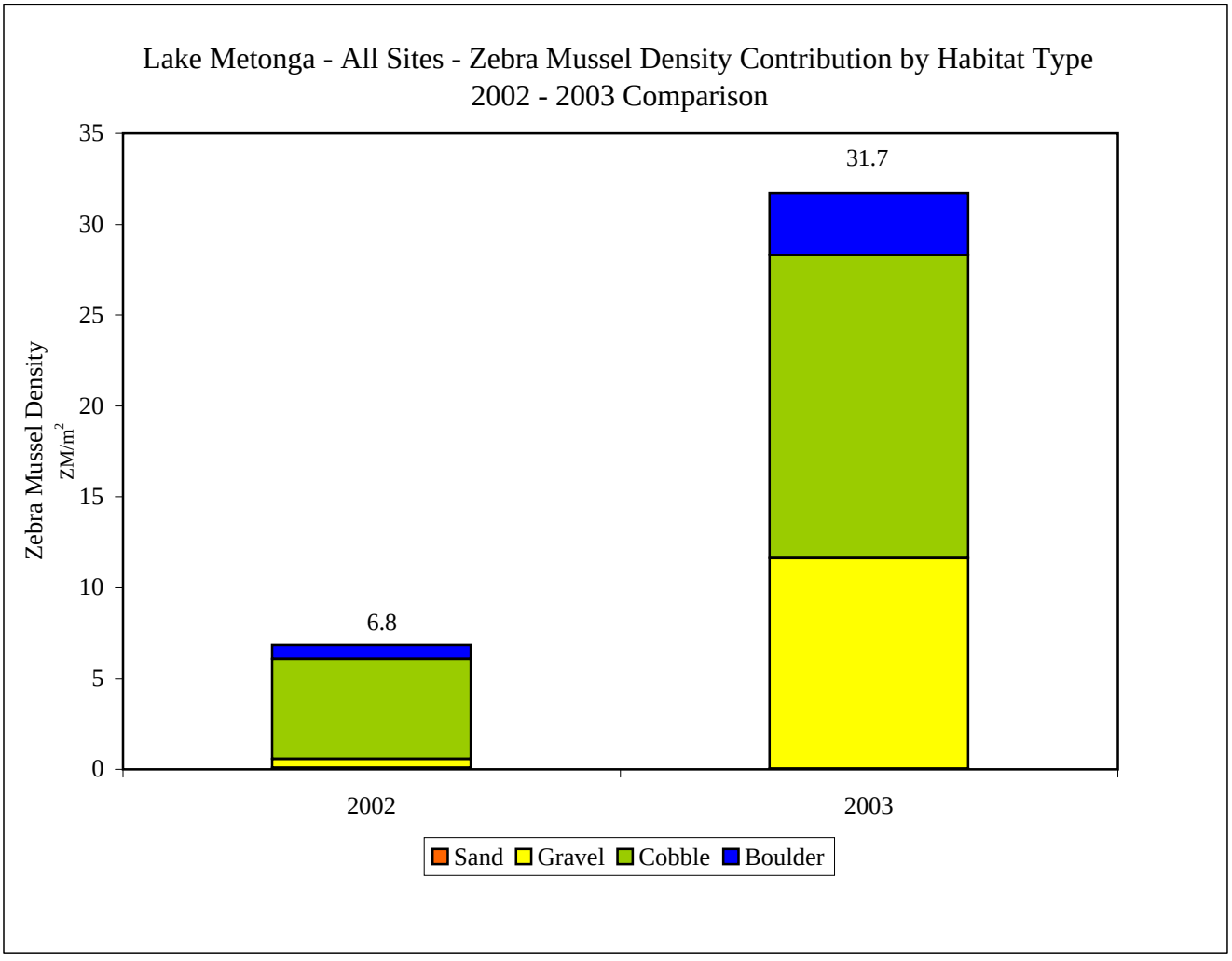
ZM Total	2
ZM Avg Density by (ZM/m2)	0.4
ZM Highest Density (ZM/m2)	8

*Zebra mussel density average per substrate type (ZM/m^2)

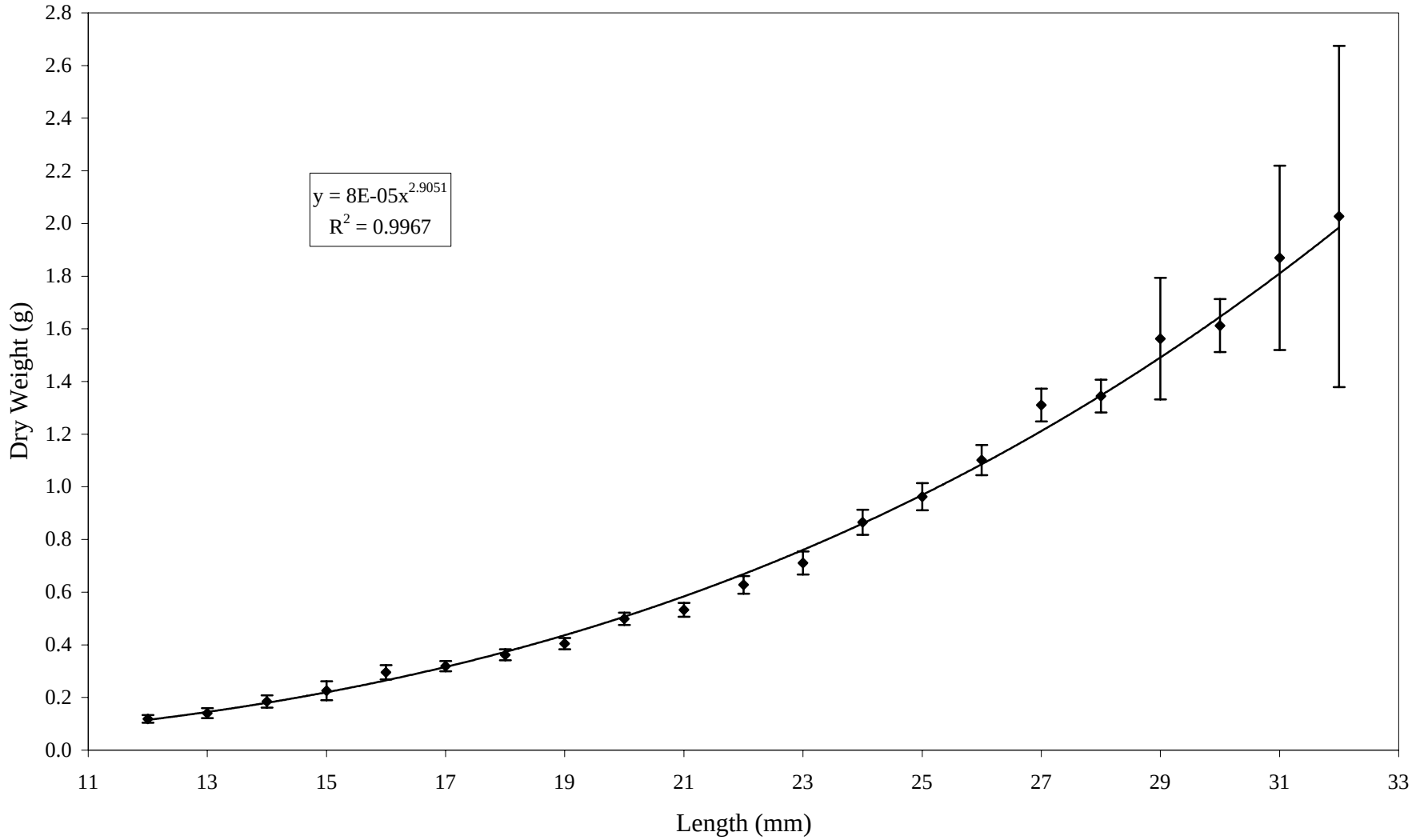
Length (mm)	%Freq 2002	%Freq 2003
11	13.5	0.3
12	8.1	0.5
13	6.1	0.8
14	7.7	1.4
15	12.8	2.7
16	15.2	4.5
17	9.8	8.0
18	4.7	10.9
19	3.4	13.8
20	1.3	15.1
21	0.7	12.9
22	4.0	9.3
23	3.0	5.6
24	0.7	4.1
25	3.4	3.0
26	1.7	2.2
27	2.7	1.9
28	0.7	1.4
29	0.7	0.4
30	0.0	0.7
31	0.0	0.3
32	0.0	0.1
Average Length (mm)	16.4	20.2



2002			2003		
Habitat Type	Habitat % Freq	ZM Density	Habitat Type	Habitat % Freq	ZM Density
Sand	46.8	0.08	Sand	48.0	0.04
Gravel	31.3	0.49	Gravel	33.2	11.58
Cobble	16.8	5.51	Cobble	14.7	16.68
Boulder	2.7	0.76	Boulder	4.1	3.42
Total		6.8	Total		31.7



Lake Metonga - Zebra Mussel Average Dry Weight - All Sites 2003

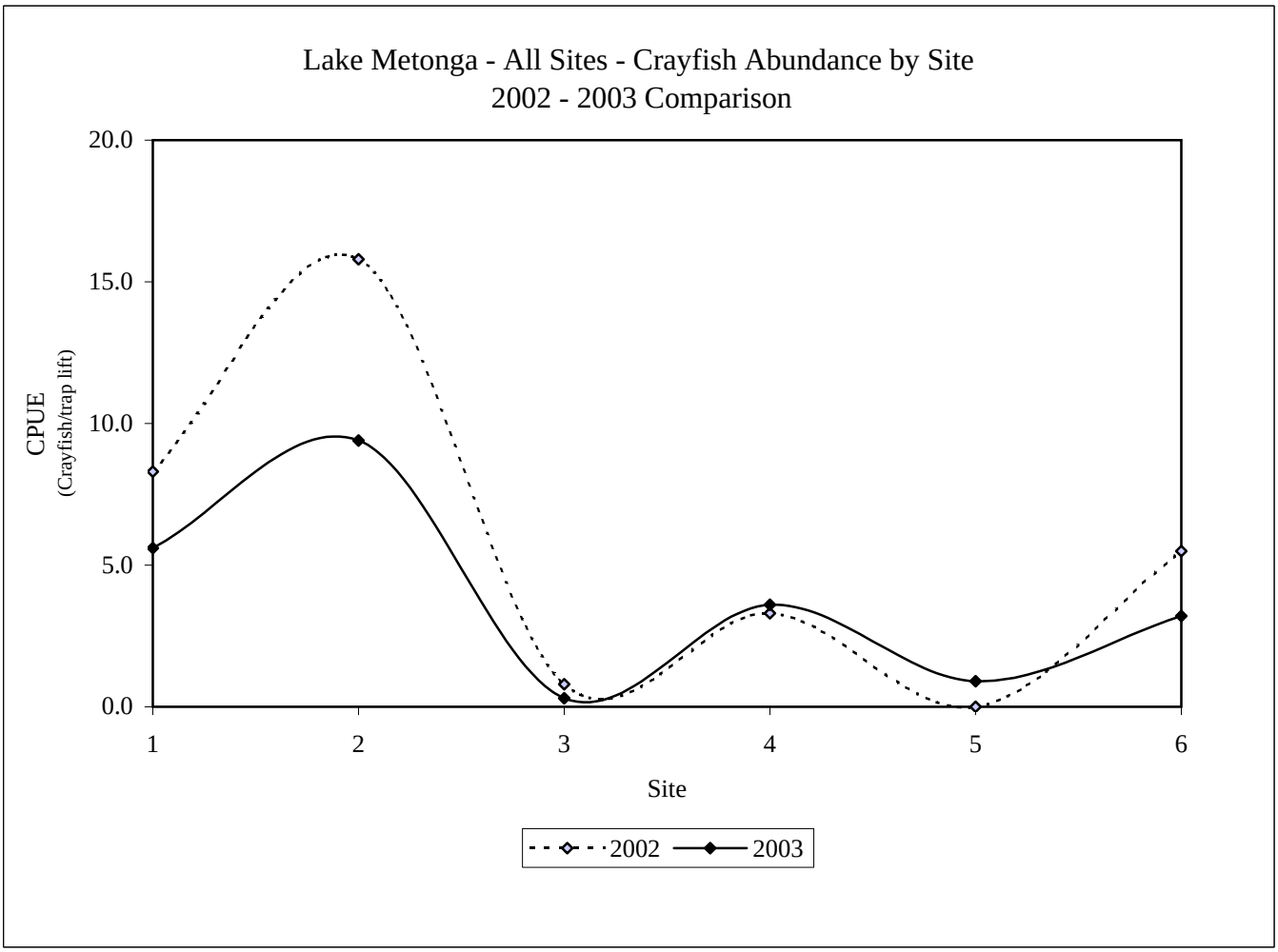


Date	Site	Depth (ft)	Substrate	Species	Frequency	Avg Length (in)
8/13/2003	1	5	Sand-cobble	Rusty crayfish	3	2.8
8/14/2003	1	5	Sand-cobble	Rusty crayfish	2	2.2
8/15/2003	1	5	Sand-cobble	Rusty crayfish	5	2.5
8/13/2003	1	10	Sand-cobble	Rusty crayfish	3	3.1
8/14/2003	1	10	Sand-cobble	Rusty crayfish	4	2.8
8/15/2003	1	10	Sand-cobble	Rusty crayfish	15	2.8
8/13/2003	1	15	Sand-cobble	Rusty crayfish	12	2.9
8/14/2003	1	15	Sand-cobble	Rusty crayfish	5	3.2
8/15/2003	1	15	Sand-cobble	Rusty crayfish	1	2.7
8/13/2003	2	5	Sand-cobble	Rusty crayfish	15	2.6
8/14/2003	2	5	Sand-cobble	Rusty crayfish	15	2.4
8/15/2003	2	5	Sand-cobble	Rusty crayfish	5	2.3
8/13/2003	2	10	Sand-cobble	Rusty crayfish	12	2.6
8/14/2003	2	10	Sand-cobble	Rusty crayfish	7	2.4
8/15/2003	2	10	Sand-cobble	Rusty crayfish	15	2.8
8/13/2003	2	15	Sand-Gravel	Rusty crayfish	9	2.4
8/14/2003	2	15	Sand-Gravel		0	0
8/15/2003	2	15	Sand-Gravel	Rusty crayfish	7	2.7
8/13/2003	3	5	Sand-vegetation	Rusty crayfish	0	0
8/14/2003	3	5	Sand-vegetation	Rusty crayfish	1	3.4
8/15/2003	3	5	Sand-vegetation	Rusty crayfish	1	2.9
8/13/2003	3	10	Sand-vegetation	Northern crayfish	1	4.4
8/14/2003	3	10	Sand-vegetation		0	0
8/15/2003	3	10	Sand-vegetation		0	0
8/13/2003	3	15	Sand-vegetation	Rusty crayfish	1	2.8
8/14/2003	3	15	Sand-vegetation		0	0
8/15/2003	3	15	Sand-vegetation		0	0
8/13/2003	4	5	Sand		0	0
8/14/2003	4	5	Sand	Rusty crayfish	7	3.6
8/14/2003	4	5	Sand	Northern crayfish	1	4.1
8/15/2003	4	5	Sand	Rusty crayfish	3	3.2
8/13/2003	4	10	Sand-vegetation	Rusty crayfish	1	3.6
8/14/2003	4	10	Sand-vegetation	Rusty crayfish	2	3.1
8/15/2003	4	10	Sand-vegetation		0	0
8/13/2003	4	15	Sand-vegetation	Rusty crayfish	11	3.4
8/14/2003	4	15	Sand-vegetation		0	0
8/15/2003	4	15	Sand-vegetation	Rusty crayfish	8	3.5
8/15/2003	4	15	Sand-vegetation	Northern crayfish	1	4.5
8/13/2003	5	5	Sand-cobble	Rusty crayfish	0	0
8/14/2003	5	5	Sand-cobble	Rusty crayfish	0	0
8/15/2003	5	5	Sand-cobble	Rusty crayfish	1	2.3
8/13/2003	5	10	Sand-cobble	Rusty crayfish	0	0
8/14/2003	5	10	Sand-cobble	Rusty crayfish	3	2.3
8/15/2003	5	10	Sand-cobble	Rusty crayfish	0	0
8/13/2003	5	15	Sand	Rusty crayfish	1	2.8
8/14/2003	5	15	Sand	Rusty crayfish	0	0
8/15/2003	5	15	Sand	Rusty crayfish	3	2.3
8/13/2003	6	5	Sand-cobble	Rusty crayfish	1	2.3
8/14/2003	6	5	Sand-cobble	Rusty crayfish	5	2.7
8/15/2003	6	5	Sand-cobble	Rusty crayfish	6	2.4

Date	Site	Depth (ft)	Substrate	Species	Frequency	Avg Length (in)
8/13/2003	6	10	Sand	Rusty crayfish	2	3.4
8/14/2003	6	10	Sand	Rusty crayfish	4	2.9
8/15/2003	6	10	Sand	Rusty crayfish	2	2.8
8/13/2003	6	15	Sand	Rusty crayfish	3	3.4
8/14/2003	6	15	Sand	Rusty crayfish	3	3.0
8/15/2003	6	15	Sand	Rusty crayfish	3	2.5

2002			2003		
Site	Avg Length (in)	CPUE*	Site	Avg Length (in)	CPUE*
1	2.9	8.3	1	2.8	5.6
2	2.6	15.8	2	2.6	9.4
3	3.6	0.8	3	3.0	0.3
4	3.3	3.3	4	3.4	3.6
5	0.0	0.0	5	2.4	0.9
6	2.8	5.5	6	2.8	3.2
Avg	2.8	5.6	Avg	2.8	3.8

*CPUE=Catch/Unit of Effort=Crayfish/trap lift



Lake Metonga - Entire Shoreline
Fall YOY Walleye Survey Data
9/29/03

SMALL WALLEYE LENGTH FREQUENCIES (0.1 INCH GROUPS)			
Size in Inches	No. of Walleye	Size in Inches	No. of Walleye
<= 2.0		7.0	
2.1		7.1	
2.2		7.2	
2.3		7.3	
2.4		7.4	
2.5		7.5	
2.6		7.6	2
2.7		7.7	1
2.8		7.8	2
2.9		7.9	1
3.0		8.0	3
3.1		8.1	2
3.2		8.2	1
3.3		8.3	
3.4		8.4	3
3.5		8.5	2
3.6		8.6	4
3.7		8.7	1
3.8		8.8	
3.9		8.9	2
4.0		9.0	
4.1		9.1	2
4.2		9.2	
4.3		9.3	1
4.4		9.4	2
4.5		9.5	
4.6	1	9.6	4
4.7	1	9.7	1
4.8		9.8	
4.9	1	9.9	1
5.0		10.0	
5.1	1	10.1	2
5.2		10.2	1
5.3		10.3	2
5.4		10.4	
5.5		10.5	
5.6		10.6	2
5.7		10.7	2
5.8	1	10.8	4
5.9		10.9	2
6.0		11.0	
6.1		11.1	
6.2		11.2	2
6.3		11.3	
6.4		11.4	1
6.5		11.5	
6.6		11.6	3
6.7		11.7	
6.8		11.8	2
6.9		11.9	2
TOTAL:	5	TOTAL:	60

ALL SPECIES LENGTH FREQUENCIES (0.5 INCH GROUPS)																			
Size in	SPECIES											SIZE IN		SPECIES		
Inches	Walleye	MUE	NOP	LMB	SMB	YEP	BCR	BLG	PKS	RKB	*	INCHES	WAE	MUE	NOP	
<3.0												27.0-27.5				
3.0-3.4												27.5-27.9				
3.5-3.9												28.0-28.4				
4.0-4.4												28.5-28.9				
4.5-4.9												29.0-29.4				
5.0-5.4												29.5-29.9				
5.5-5.9												30.0-30.4				
6.0-6.4												30.5-30.9				
6.5-6.9												31.0-31.4				
7.0-7.4												31.5-31.9				
7.5-7.9												32.0-32.4				
8.0-8.4												32.5-32.9				
8.5-8.9												33.0-33.4				
9.0-9.4												33.5-33.9				
9.5-9.9												34.0-34.4				
10.0-10.4												34.5-34.9				
10.5-10.9												35.0-35.4				
11.0-11.4												35.5-35.9				
11.5-11.9												36.0-36.4				
12.0-12.4	3											36.5-36.9				
12.5-12.9	3											37.0-37.4				
13.0-13.4	1											37.5-37.9				
13.5-13.9	3											38.0-38.4				
14.0-14.4	1											38.5-38.9				
14.5-14.9												39.0-39.4				
15.0-15.4	2											39.5-39.9				
15.5-15.9	1											40.0-40.9				
16.0-16.4	1											41.0-41.9				
16.5-16.9	2											42.0-42.9				
17.0-17.4												43.0-43.9				
17.5-17.9	2											44.0-44.9				
18.0-18.4												45.0-45.9				
18.5-18.9												46.0-46.9				
19.0-19.4												47.0-47.9				
19.5-19.9												48.0-48.9				
20.0-20.4	1											49.0-49.9				
20.5-20.9												50.0-50.9				
21.0-21.4	1											51.0-51.9				
21.5-21.9	1											52.0-52.9				
22.0-22.4												53.0-53.9				
22.5-22.9												54.0-54.9				
23.0-23.4												55.0-55.9				
23.5-23.9												56.0-56.9				
24.0-24.4												57.0-57.9				
24.5-24.9												58.0-58.9				
25.0-25.4												59.0-59.9				
25.5-25.9												60.0+				
26.0-26.4																
26.5-26.9																
TOTAL:	22	0	0	0	0	0	0	0	0	0	0	TOTAL:	0	0	0	

Walleye 2002-2003 Comparison		
	2002*	2003
Age 0/mile	41.6	0.6
Age 1/mile	3.5	5.7
Length (in):		
Age 0 Min	4.4	4.6
Age 0 Max	7.9	6.1
Age 0 Avg	6.2	5.0
Age 1 Min	8.0	7.6
Age 1 Max	10.2	10.7
Age 1 Avg	9.0	9.0

*2002=Walleye stocked by Wisconsin DNR
107,850 with avg length of 1.3"
67% of age 0 determined stocked through OTC marks

Length (in)	Length (mm)	Log Length	Weight (g)	Log Weight	W/L	K[a]	Wr[b]		
4.6	116.8	2.1	12	1.1	0.10	7.5	90.6		
6.1	154.9	2.2	28	1.4	0.18	7.5	86.2		
7.7	195.6	2.3	66	1.8	0.34	8.8	96.9		
8.0	203.2	2.3	60	1.8	0.30	7.2	78.0		
8.0	203.2	2.3	72	1.9	0.35	8.6	93.6		
8.0	203.2	2.3	61	1.8	0.30	7.3	79.3		
8.1	205.7	2.3	64	1.8	0.31	7.3	80.0		
8.4	213.4	2.3	76	1.9	0.36	7.8	84.6		
8.5	215.9	2.3	91	2.0	0.42	9.0	97.5		
8.5	215.9	2.3	83	1.9	0.38	8.2	89.0		
8.6	218.4	2.3	83	1.9	0.38	8.0	85.7		
8.7	221.0	2.3	84	1.9	0.38	7.8	83.6		
8.9	226.1	2.4	105	2.0	0.46	9.1	97.2		
8.9	226.1	2.4	93	2.0	0.41	8.1	86.1		
9.4	238.8	2.4	117	2.1	0.49	8.6	91.0		
9.6	243.8	2.4	114	2.1	0.47	7.9	83.0		
9.7	246.4	2.4	138	2.1	0.56	9.2	97.2		
9.9	251.5	2.4	137	2.1	0.54	8.6	90.4		
10.2	259.1	2.4	145	2.2	0.56	8.3	87.0		
10.3	261.6	2.4	142	2.2	0.54	7.9	82.6		
10.6	269.2	2.4	151	2.2	0.56	7.7	80.2		
10.7	271.8	2.4	191	2.3	0.70	9.5	98.5		
10.7	271.8	2.4	163	2.2	0.60	8.1	84.0		
10.9	276.9	2.4	172	2.2	0.62	8.1	83.6		
10.9	276.9	2.4	168	2.2	0.61	7.9	81.6		
11.2	284.5	2.5	189	2.3	0.66	8.2	84.3		
11.3	287.0	2.5	168	2.2	0.59	7.1	72.8		
11.4	289.6	2.5	236	2.4	0.82	9.7	99.4		
11.7	297.2	2.5	205	2.3	0.69	7.8	79.5		
11.8	299.7	2.5	236	2.4	0.79	8.8	89.1		
12.1	307.3	2.5	204	2.3	0.66	7.0	71.1		
12.8	325.1	2.5	275	2.4	0.85	8.0	80.2		2002 Wr
4.6	116.8	2.1	12.0	1.1	0.10	7.0	71.1	Min	81.1
12.8	325.1	2.5	275.0	2.4	0.85	9.7	99.4	Max	99.2
9.6	243.0	2.4	129.0	2.0	0.50	8.2	86.4	Avg	89.6

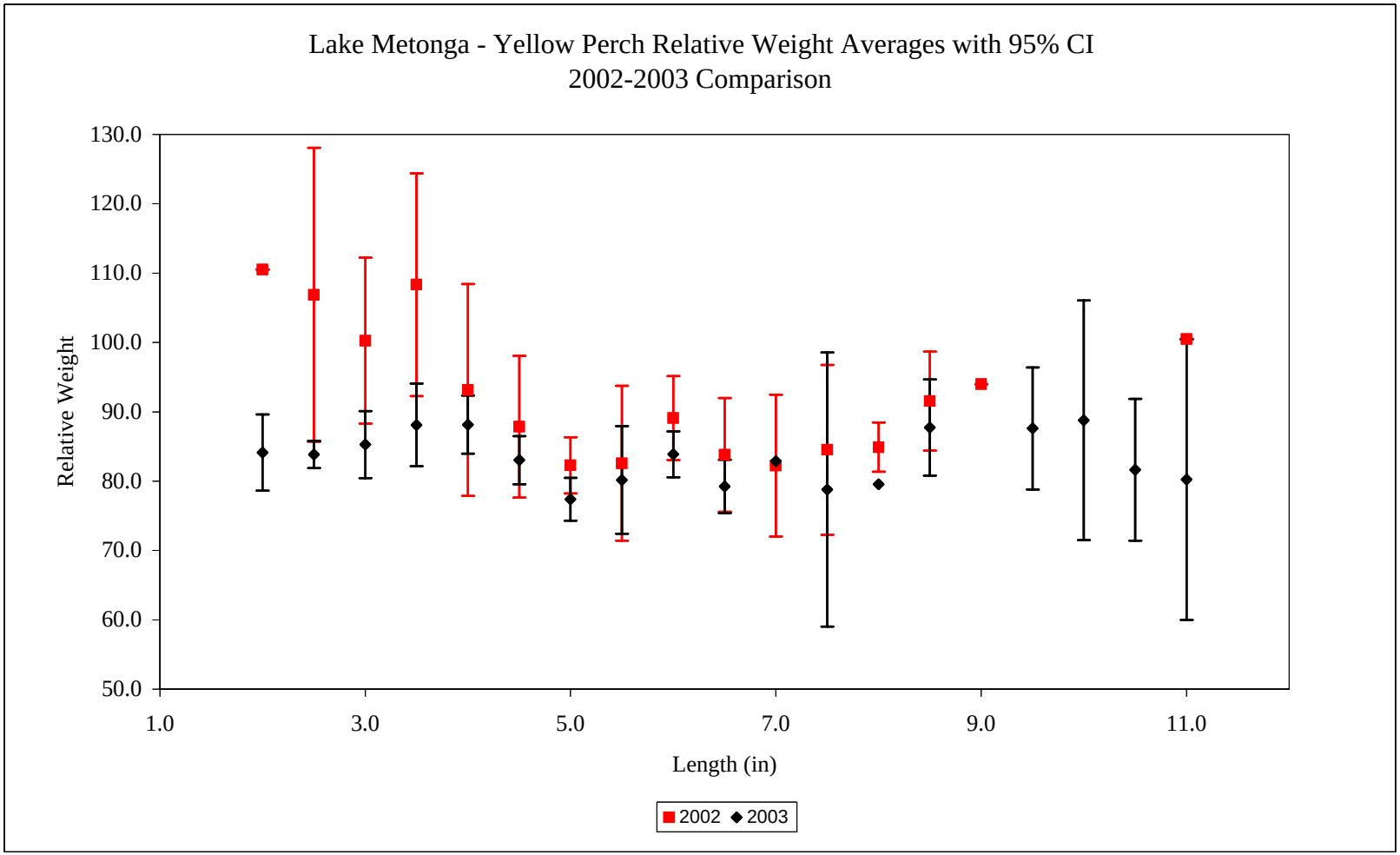
a = Fulton Condition Factor
b = Relative Weight

Length (in)	Length (mm)	Log Length	Weight (g)	Log Weight	W/L	K[a]	Wr[b]
2.3	58.4	1.8	1.5698	0.2	0.03	7.9	75.1
2.4	61.0	1.8	2.1982	0.3	0.04	9.7	91.7
2.4	61.0	1.8	2.0638	0.3	0.03	9.1	86.1
2.4	61.0	1.8	2.0508	0.3	0.03	9.1	85.6
2.4	61.0	1.8	2.0435	0.3	0.03	9.0	85.2
2.4	61.0	1.8	1.8473	0.3	0.03	8.2	77.1
2.4	61.0	1.8	2.1132	0.3	0.03	9.3	88.2
2.5	63.5	1.8	2.4402	0.4	0.04	9.5	89.2
2.5	63.5	1.8	2.1954	0.3	0.03	8.6	80.3
2.5	63.5	1.8	2.3782	0.4	0.04	9.3	87.0
2.5	63.5	1.8	2.0869	0.3	0.03	8.2	76.3
2.5	63.5	1.8	2.1403	0.3	0.03	8.4	78.3
2.5	63.5	1.8	2.3015	0.4	0.04	9.0	84.1
2.6	66.0	1.8	2.5819	0.4	0.04	9.0	83.2
2.6	66.0	1.8	2.9979	0.5	0.05	10.4	96.6
2.6	66.0	1.8	2.5155	0.4	0.04	8.7	81.0
2.6	66.0	1.8	2.5646	0.4	0.04	8.9	82.6
2.6	66.0	1.8	2.7444	0.4	0.04	9.5	88.4
2.6	66.0	1.8	2.7674	0.4	0.04	9.6	89.1
2.6	66.0	1.8	2.4664	0.4	0.04	8.6	79.4
2.6	66.0	1.8	2.2694	0.4	0.03	7.9	73.1
2.6	66.0	1.8	2.3796	0.4	0.04	8.3	76.7
2.6	66.0	1.8	2.5513	0.4	0.04	8.9	82.2
2.6	66.0	1.8	2.6615	0.4	0.04	9.2	85.7
2.7	68.6	1.8	2.9235	0.5	0.04	9.1	83.4
2.7	68.6	1.8	3.0892	0.5	0.05	9.6	88.1
2.7	68.6	1.8	2.9070	0.5	0.04	9.0	82.9
2.7	68.6	1.8	3.0133	0.5	0.04	9.3	85.9
2.7	68.6	1.8	3.0406	0.5	0.04	9.4	86.7
2.7	68.6	1.8	2.9850	0.5	0.04	9.3	85.1
2.7	68.6	1.8	3.3524	0.5	0.05	10.4	95.6
2.7	68.6	1.8	3.2015	0.5	0.05	9.9	91.3
2.8	71.1	1.9	3.1427	0.5	0.04	8.7	79.7
2.8	71.1	1.9	3.6983	0.6	0.05	10.3	93.8
2.8	71.1	1.9	3.1014	0.5	0.04	8.6	78.6
2.8	71.1	1.9	3.7201	0.6	0.05	10.3	94.3
2.8	71.1	1.9	3.4214	0.5	0.05	9.5	86.8
2.8	71.1	1.9	2.8698	0.5	0.04	8.0	72.8
2.8	71.1	1.9	3.3723	0.5	0.05	9.4	85.5
2.8	71.1	1.9	3.1781	0.5	0.04	8.8	80.6
2.8	71.1	1.9	3.1712	0.5	0.04	8.8	80.4
2.9	73.7	1.9	3.8522	0.6	0.05	9.6	87.2
2.9	73.7	1.9	3.4111	0.5	0.05	8.5	77.2
2.9	73.7	1.9	3.6393	0.6	0.05	9.1	82.4
2.9	73.7	1.9	3.3166	0.5	0.05	8.3	75.1
3.0	76.2	1.9	4.1804	0.6	0.05	9.4	84.8
3.0	76.2	1.9	4.1120	0.6	0.05	9.3	83.4
3.0	76.2	1.9	4.6126	0.7	0.06	10.4	93.6
3.0	76.2	1.9	4.2949	0.6	0.06	9.7	87.1
3.1	78.7	1.9	4.3297	0.6	0.05	8.9	79.0

3.1	78.7	1.9	4.3600	0.6	0.06	8.9	79.6
3.3	83.8	1.9	5.9884	0.8	0.07	10.2	89.3
3.7	94.0	2.0	8.2378	0.9	0.09	9.9	84.9
3.8	96.5	2.0	8.9030	0.9	0.09	9.9	84.2
3.8	96.5	2.0	10.3288	1.0	0.11	11.5	97.7
3.8	96.5	2.0	9.4541	1.0	0.10	10.5	89.4
3.8	96.5	2.0	8.6754	0.9	0.09	9.6	82.0
3.9	99.1	2.0	10.4046	1.0	0.11	10.7	90.5
4.0	101.6	2.0	12.6080	1.1	0.12	12.0	101.0
4.0	101.6	2.0	10.0948	1.0	0.10	9.6	80.9
4.0	101.6	2.0	10	1.0	0.10	9.5	80.1
4.1	104.1	2.0	11	1.0	0.11	9.7	81.4
4.1	104.1	2.0	13	1.1	0.12	11.5	96.2
4.2	106.7	2.0	13.2178	1.1	0.12	10.9	90.5
4.2	106.7	2.0	11.9411	1.1	0.11	9.8	81.7
4.2	106.7	2.0	13.0805	1.1	0.12	10.8	89.5
4.2	106.7	2.0	13	1.1	0.12	10.7	89.0
4.3	109.2	2.0	14	1.1	0.13	10.7	88.8
4.4	111.8	2.0	14.5078	1.2	0.13	10.4	85.4
4.4	111.8	2.0	15.8532	1.2	0.14	11.4	93.4
4.5	114.3	2.1	15	1.2	0.13	10.0	82.1
4.5	114.3	2.1	16	1.2	0.14	10.7	87.6
4.6	116.8	2.1	15.9951	1.2	0.14	10.0	81.6
4.6	116.8	2.1	17	1.2	0.15	10.7	86.7
4.6	116.8	2.1	15	1.2	0.13	9.4	76.5
4.6	116.8	2.1	15	1.2	0.13	9.4	76.5
4.6	116.8	2.1	15	1.2	0.13	9.4	76.5
4.7	119.4	2.1	17.1814	1.2	0.14	10.1	81.8
4.7	119.4	2.1	16.7174	1.2	0.14	9.8	79.6
4.7	119.4	2.1	17.3488	1.2	0.15	10.2	82.6
4.7	119.4	2.1	19	1.3	0.16	11.2	90.4
4.8	121.9	2.1	19	1.3	0.16	10.5	84.5
4.8	121.9	2.1	16	1.2	0.13	8.8	71.1
4.8	121.9	2.1	23	1.4	0.19	12.7	102.3
4.8	121.9	2.1	20	1.3	0.16	11.0	88.9
4.9	124.5	2.1	19.0367	1.3	0.15	9.9	79.2
4.9	124.5	2.1	22.0130	1.3	0.18	11.4	91.6
4.9	124.5	2.1	20	1.3	0.16	10.4	83.2
4.9	124.5	2.1	18	1.3	0.14	9.3	74.9
5.0	127.0	2.1	20	1.3	0.16	9.8	77.9
5.1	129.5	2.1	21.3307	1.3	0.16	9.8	78.0
5.1	129.5	2.1	19.2182	1.3	0.15	8.8	70.3
5.1	129.5	2.1	20.6787	1.3	0.16	9.5	75.6
5.1	129.5	2.1	22	1.3	0.17	10.1	80.4
5.2	132.1	2.1	24	1.4	0.18	10.4	82.4
5.2	132.1	2.1	23	1.4	0.17	10.0	79.0
5.2	132.1	2.1	22	1.3	0.17	9.5	75.5
5.6	142.2	2.2	29	1.5	0.20	10.1	78.4
5.6	142.2	2.2	31	1.5	0.22	10.8	83.8
5.6	142.2	2.2	29	1.5	0.20	10.1	78.4
6.0	152.4	2.2	42	1.6	0.28	11.9	90.8
6.2	157.5	2.2	41	1.6	0.26	10.5	79.8

6.2	157.5	2.2	42	1.6	0.27	10.8	81.7	
6.3	160.0	2.2	46	1.7	0.29	11.2	85.0	
6.3	160.0	2.2	48	1.7	0.30	11.7	88.7	
6.3	160.0	2.2	44	1.6	0.27	10.7	81.3	
6.3	160.0	2.2	44	1.6	0.27	10.7	81.3	
6.4	162.6	2.2	47	1.7	0.29	10.9	82.5	
6.5	165.1	2.2	46	1.7	0.28	10.2	76.8	
6.6	167.6	2.2	47	1.7	0.28	10.0	74.7	
6.6	167.6	2.2	54	1.7	0.32	11.5	85.8	
6.6	167.6	2.2	50	1.7	0.30	10.6	79.5	
6.6	167.6	2.2	50	1.7	0.30	10.6	79.5	
6.7	170.2	2.2	55	1.7	0.32	11.2	83.3	
6.8	172.7	2.2	52	1.7	0.30	10.1	75.1	
7.1	180.3	2.3	66	1.8	0.37	11.3	82.9	
7.7	195.6	2.3	94	2.0	0.48	12.6	90.8	
7.7	195.6	2.3	64	1.8	0.33	8.6	61.8	
7.7	195.6	2.3	81	1.9	0.41	10.8	78.3	
7.8	198.1	2.3	91	2.0	0.46	11.7	84.3	
8.1	205.7	2.3	97	2.0	0.47	11.1	79.6	
8.6	218.4	2.3	134	2.1	0.61	12.9	90.6	
8.6	218.4	2.3	121	2.1	0.55	11.6	81.8	
8.9	226.1	2.4	144	2.2	0.64	12.5	87.1	
8.9	226.1	2.4	151	2.2	0.67	13.1	91.4	
9.6	243.8	2.4	181	2.3	0.74	12.5	85.8	
9.7	246.4	2.4	207	2.3	0.84	13.8	94.9	
9.8	248.9	2.4	174	2.2	0.70	11.3	77.1	
9.8	248.9	2.4	211	2.3	0.85	13.7	93.5	
9.9	251.5	2.4	202	2.3	0.80	12.7	86.7	
10.2	259.1	2.4	229	2.4	0.88	13.2	89.2	
10.4	264.2	2.4	261	2.4	0.99	14.2	95.5	
10.4	264.2	2.4	223	2.3	0.84	12.1	81.6	
10.6	269.2	2.4	249	2.4	0.92	12.8	85.7	
10.7	271.8	2.4	232	2.4	0.85	11.6	77.4	
10.7	271.8	2.4	245	2.4	0.90	12.2	81.8	
11.0	279.4	2.4	268	2.4	0.96	12.3	81.8	
11.2	284.5	2.5	273	2.4	0.96	11.9	78.6	
2.3	58.4	1.8	1.6	0.2	0.0	7.9	61.8	Min
11.2	284.5	2.5	273.0	2.4	1.0	14.2	102.3	Max
4.9	123.7	2.0	41.1	1.1	0.2	10.2	83.8	Avg

a = Fulton Condition Factor
b = Relative Weight


Lake Metonga - Yellow Perch Relative Weight Averages with 95% CI
2002-2003 Comparison
Relative Weight
130.0
120.0
110.0
100.0
90.0
80.0
70.0
60.0
50.0
1.0
3.0
5.0
7.0
9.0
11.0
Length (in)
2002
2003

Length (in)	Length (mm)	Log Length	Weight (g)	Log Weight	W/L	K[a]	Wr[b]		
12.8	325.1	2.5	182	2.3	0.56	5.3	83.1		
17.7	449.6	2.7	530	2.7	1.18	5.8	88.8		
17.9	454.7	2.7	584	2.8	1.28	6.2	94.5		
18.0	457.2	2.7	588	2.8	1.29	6.2	93.5		
18.4	467.4	2.7	628	2.8	1.34	6.2	93.3		
18.6	472.4	2.7	553	2.7	1.17	5.2	79.4		
18.9	480.1	2.7	688	2.8	1.43	6.2	94.0		
19.6	497.8	2.7	760	2.9	1.53	6.2	92.8		
20.0	508.0	2.7	820	2.9	1.61	6.3	94.1		
20.4	518.2	2.7	860	2.9	1.66	6.2	92.8		
21.2	538.5	2.7	889	2.9	1.65	5.7	85.2		
21.4	543.6	2.7	896	3.0	1.65	5.6	83.4		
21.4	543.6	2.7	867	2.9	1.60	5.4	80.7		
22.5	571.5	2.8	1216	3.1	2.13	6.5	96.9		
23.7	602.0	2.8	1480	3.2	2.46	6.8	100.4		
25.2	640.1	2.8	1451	3.2	2.27	5.5	81.4		2002 Wr
12.8	325.1	2.5	182.0	2.3	0.56	5.2	79.4	Min	65.6
25.2	640.1	2.8	1480.0	3.2	2.46	6.8	100.4	Max	92.3
19.9	504.3	2.7	812.0	2.9	1.55	6.0	89.6	Avg	83.6

a = Fulton Condition Factor
b = Relative Weight