

Eighth Lake

Location

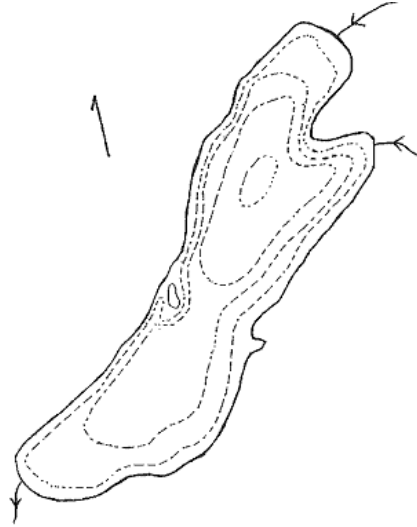
Pond Number: 040790
Watershed: Black River
County Hamilton
Topographic Quadrangle: Raquette

Sample Site

Latitude: 43° 46.825'
Longitude: 74° 42.130'

Morphometry

Surface Area: 303 Ac.
Mean Depth: 39 Ft.
Maximum Depth: 81 Ft.
Volume: 11,817 Ac./Ft.
Watershed Area: 2,034 Ac.
Hydraulic Retention Time: 2.5 Yr.
Shoreline Length: 4.0 Mi.
Elevation: 1,791 Ft.
Water Quality Classification: A(T)
Trophic State: Mesotrophic



Temperature and Dissolved Oxygen

Eighth Lake had a minimum DO of 0.3 mg/L (October 1996 and October 1997), with a minimum temperature of 5.0°C and a maximum temperature of 24.2°C. In general, the lowest DO values occurred during the months of August through October.

pH

Figure 24 presents the seasonal mean pH trend in Eighth Lake, while Table 17 presents descriptive statistics for pH in Eighth Lake. The pH in Eighth Lake exhibited a significant decline in 1995 and 1996, followed by higher and stable values from 1997 to 2003. The pH in Eighth Lake was slightly higher than the county average from 1993 until 1999, after which the two trends were quite similar. Any differences were not statistically significant.

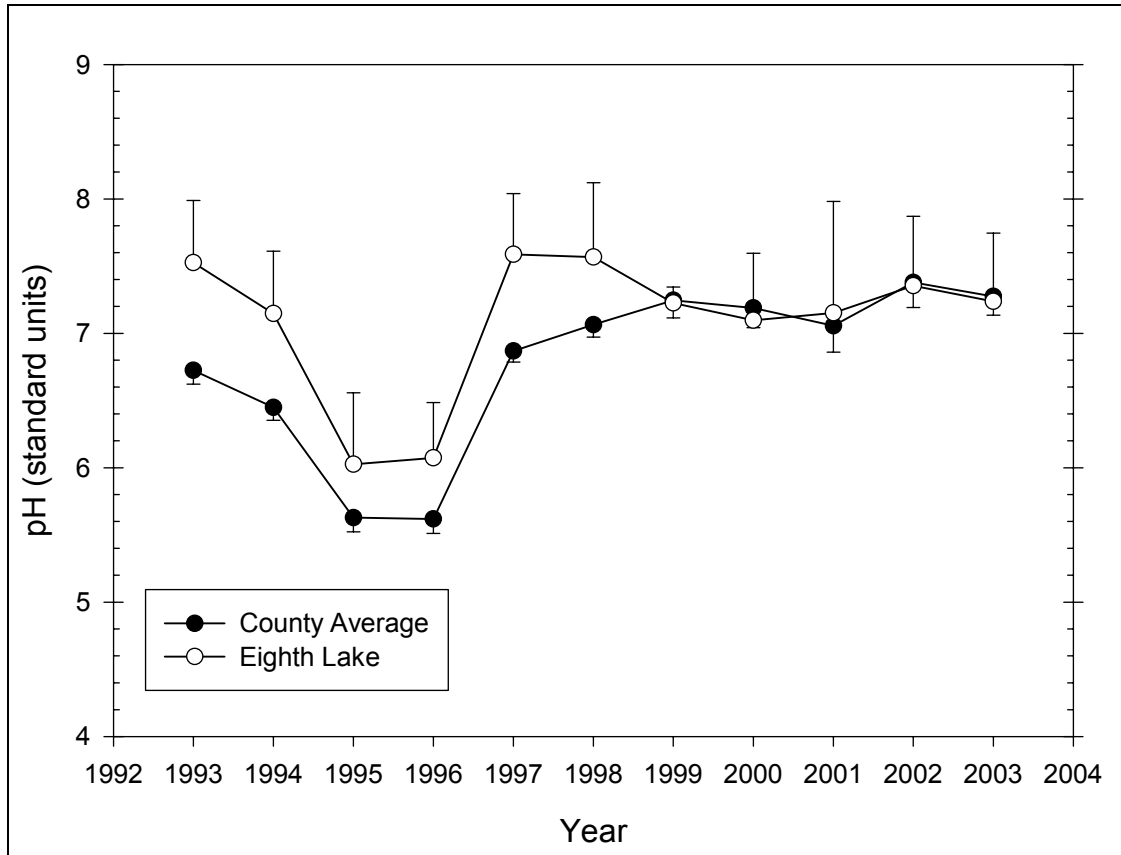


Figure 24 Seasonal mean pH trend in Eighth Lake

Table 17 – Descriptive Statistics for pH in Eighth Lake

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1993	6	1	7.526	0.373	0.167	0.463
1994	6	0	7.148	0.442	0.180	0.464
1995	6	0	6.027	0.507	0.207	0.532
1996	6	0	6.073	0.392	0.160	0.411
1997	6	0	7.588	0.432	0.176	0.453
1998	6	0	7.568	0.526	0.215	0.552
1999	5	0	7.226	0.0956	0.0427	0.119
2000	6	0	7.098	0.474	0.194	0.498
2001	4	0	7.153	0.521	0.261	0.830
2002	4	0	7.355	0.325	0.162	0.517
2003	4	0	7.238	0.320	0.160	0.509
Year	Range	Max	Min	Median	25%	75%
1993	0.990	7.910	6.920	7.620	7.340	7.753
1994	1.250	7.830	6.580	7.215	6.760	7.290
1995	1.380	6.650	5.270	6.110	5.640	6.380
1996	0.960	6.720	5.760	5.895	5.780	6.390
1997	1.250	8.340	7.090	7.560	7.270	7.710
1998	1.370	8.460	7.090	7.470	7.110	7.810
1999	0.230	7.370	7.140	7.200	7.148	7.295
2000	1.330	7.530	6.200	7.155	7.100	7.450
2001	1.190	7.800	6.610	7.100	6.745	7.560

2002	0.770	7.670	6.900	7.425	7.160	7.550
2003	0.750	7.690	6.940	7.160	7.035	7.440
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1993	-1.286	2.199	0.251	0.346	37.630	283.759
1994	0.277	0.0656	0.208	0.500	42.890	307.568
1995	-0.450	-0.736	0.163	0.714	36.160	219.207
1996	1.168	-0.183	0.319	0.056	36.440	222.080
1997	1.009	1.647	0.222	0.416	45.530	346.428
1998	1.018	0.503	0.208	0.496	45.410	345.062
1999	0.945	-0.168	0.207	0.564	36.130	261.112
2000	-1.691	3.466	0.335	0.034	42.590	303.442
2001	0.453	-1.390	0.199	0.635	28.610	205.449
2002	-1.213	2.339	0.329	0.136	29.420	216.700
2003	1.323	2.375	0.309	0.195	28.950	209.833

Alkalinity

Figure 25 presents the seasonal mean alkalinity trend in Eighth Lake, while Table 18 presents descriptive statistics for alkalinity in Eighth Lake. The alkalinity in Eighth Lake exhibits no distinct trend over the period of study. The alkalinity in Eighth Lake was significantly higher than the county average, though this difference may not be statistically significant in all years.

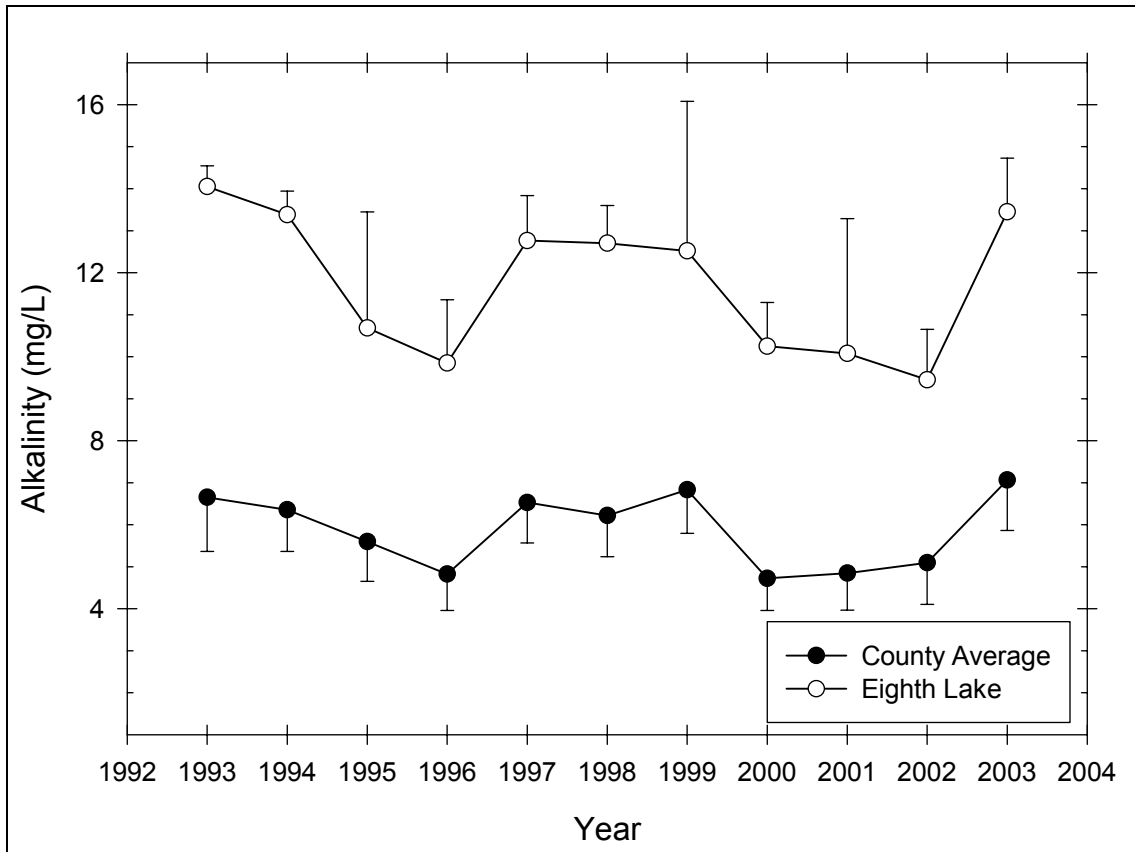


Figure 25 Seasonal mean alkalinity trend in Eighth Lake

Table 18 – Descriptive Statistics for Alkalinity in Eighth Lake

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1993	5	1	14.050	0.311	0.155	0.495
1994	6	0	13.383	0.534	0.218	0.561
1995	6	0	10.683	2.630	1.074	2.760
1996	6	0	9.850	1.436	0.586	1.507
1997	6	0	12.767	1.015	0.414	1.065
1998	6	0	12.700	0.860	0.351	0.903
1999	5	3	9.050	2.333	1.650	20.965
2000	5	0	11.300	2.005	0.897	2.490
2001	5	0	11.040	2.545	1.138	3.160
2002	5	0	10.960	2.665	1.192	3.309
2003	5	1	11.625	2.108	1.054	3.354
Year	Range	Max	Min	Median	25%	75%
1993	0.700	14.500	13.800	13.950	13.850	14.250
1994	1.500	14.400	12.900	13.300	13.000	13.400
1995	7.400	13.300	5.900	11.100	10.100	12.600
1996	3.500	11.600	8.100	10.200	8.200	10.800
1997	2.300	13.800	11.500	12.950	11.700	13.700
1998	2.000	13.700	11.700	12.650	11.900	13.600
1999	3.300	10.700	7.400	9.050	7.400	10.700
2000	5.400	14.000	8.600	10.800	10.250	12.725
2001	5.600	13.900	8.300	10.400	8.900	13.600
2002	5.400	14.000	8.600	9.600	8.825	13.775
2003	4.800	14.000	9.200	11.650	9.950	13.300
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1993	1.597	2.704	0.314	0.180	56.200	789.900
1994	1.730	3.568	0.321	0.053	80.300	1076.110
1995	-1.384	2.303	0.246	0.292	64.100	719.390
1996	-0.325	-1.760	0.208	0.497	59.100	592.450
1997	-0.314	-2.340	0.234	0.354	76.600	983.080
1998	0.0848	-2.288	0.186	0.618	76.200	971.440
1999	--	--	0.260	0.481	18.100	169.250
2000	0.0388	0.308	0.202	0.590	56.500	654.530
2001	0.256	-2.810	0.233	0.434	55.200	635.320
2002	0.534	-3.188	0.295	0.165	54.800	629.020
2003	-0.0519	-2.009	0.178	0.688	46.500	553.890

Total Phosphorus

Figure 26 presents the seasonal mean total phosphorus trend in Eighth Lake, while Table 19 presents descriptive statistics for total phosphorus in Eighth Lake. The total phosphorus in Eighth Lake exhibits a trend of decreasing concentrations, particularly between 1998 and 2003. The within year variability in phosphorus concentrations was significant, as evidenced by the large error bars. The total phosphorus in Eighth Lake was generally similar to the county average.

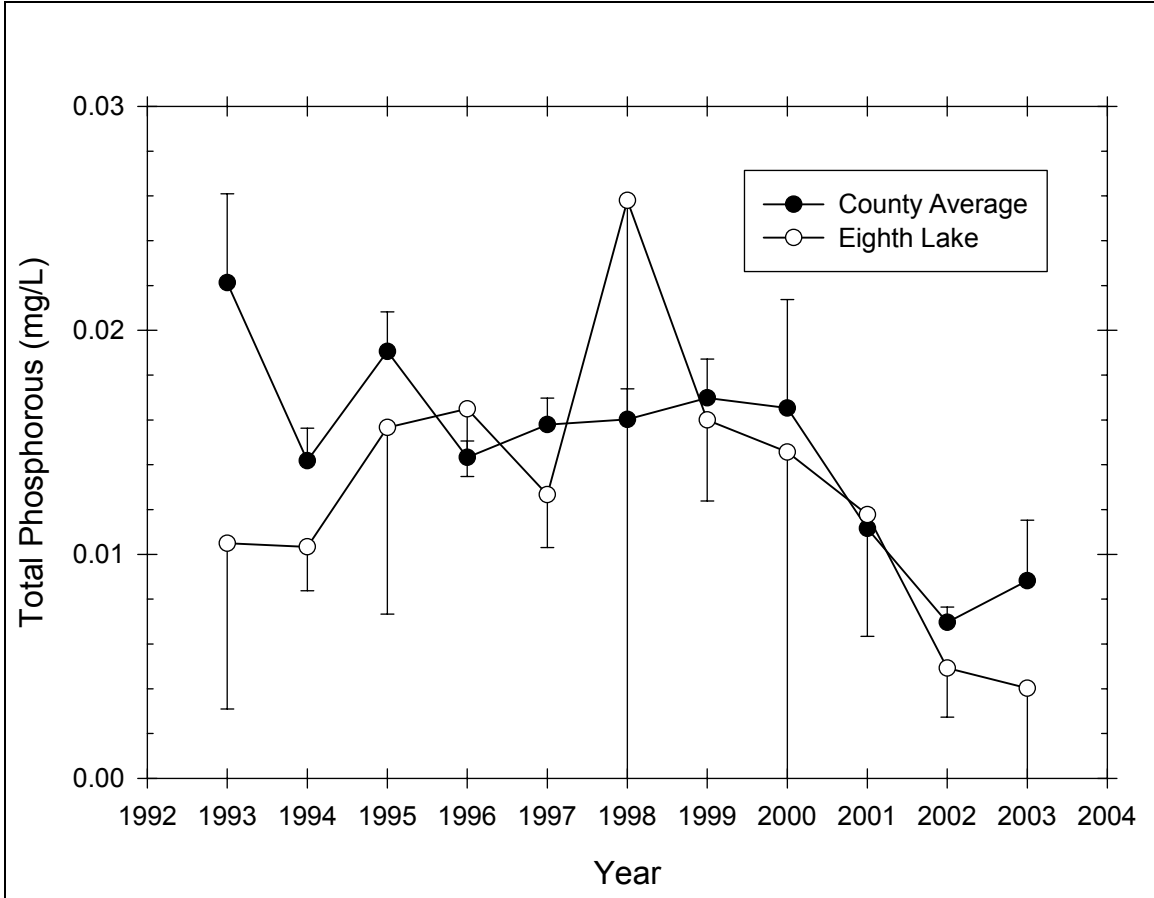


Figure 26 Seasonal mean total phosphorus in Eighth Lake

Table 19 – Descriptive Statistics for Total Phosphorus in Eighth Lake

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1993	6	2	0.0105	0.00465	0.00233	0.00741
1994	6	0	0.0103	0.00186	0.000760	0.00195
1995	6	0	0.0157	0.00794	0.00324	0.00833
1996	6	0	0.0165	0.00288	0.00118	0.00302
1997	6	0	0.0127	0.00225	0.000919	0.00236
1998	6	1	0.0258	0.0212	0.00947	0.0263
1999	6	1	0.0160	0.00292	0.00130	0.00362
2000	6	0	0.0146	0.0158	0.00645	0.0166
2001	6	2	0.0118	0.00342	0.00171	0.00544
2002	6	2	0.00492	0.00138	0.000691	0.00220
2003	6	2	0.00402	0.00263	0.00131	0.00418
Year	Range	Max	Min	Median	25%	75%
1993	0.0110	0.0150	0.00400	0.0115	0.00750	0.0135
1994	0.00500	0.0140	0.00900	0.01000	0.00900	0.01000
1995	0.0210	0.0280	0.00700	0.0145	0.00900	0.0210
1996	0.00700	0.0200	0.0130	0.0175	0.0130	0.0180
1997	0.00700	0.0160	0.00900	0.0130	0.0120	0.0130
1998	0.0480	0.0580	0.01000	0.0130	0.0108	0.0422
1999	0.00700	0.0180	0.0110	0.0170	0.0147	0.0180
2000	0.0430	0.0440	0.001000	0.0102	0.00300	0.0190

2001	0.00800	0.0164	0.00840	0.0112	0.00935	0.0142
2002	0.00280	0.00630	0.00350	0.00495	0.00375	0.00610
2003	0.00570	0.00740	0.00170	0.00350	0.00195	0.00610
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1993	-1.190	2.123	0.293	0.252	0.0420	0.000506
1994	2.066	4.649	0.404	0.003	0.0620	0.000658
1995	0.619	-0.663	0.178	0.655	0.0940	0.00179
1996	-0.452	-1.572	0.236	0.344	0.0990	0.00167
1997	-0.327	2.052	0.274	0.169	0.0760	0.000988
1998	1.118	-0.376	0.327	0.086	0.129	0.00512
1999	-1.816	3.384	0.300	0.149	0.0800	0.00131
2000	1.619	2.779	0.231	0.367	0.0874	0.00252
2001	0.958	0.993	0.224	0.546	0.0471	0.000590
2002	-0.0401	-4.964	0.260	0.389	0.0197	0.000103
2003	0.744	-1.600	0.256	0.404	0.0161	0.0000855

Nitrate

Figure 27 presents the seasonal mean nitrate trend in Eighth Lake, while Table 20 presents descriptive statistics for nitrate in Eighth Lake. The nitrate in Eighth Lake exhibited a steady decreasing trend from 1997 to 2003, perhaps starting as early as 1994. The nitrate in Eighth Lake was lower than the county average, though this difference was not statistically significant.

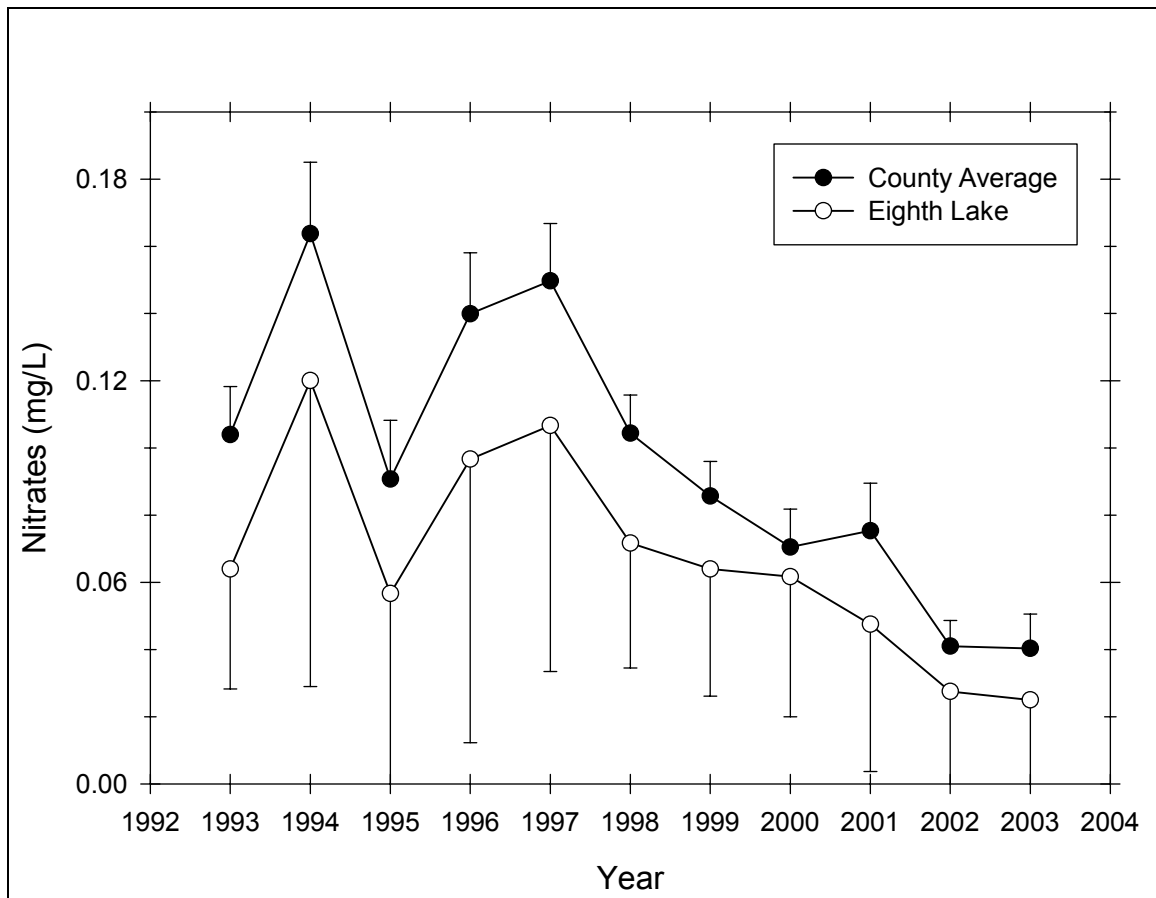


Figure 27 Seasonal mean nitrate trend in Eighth Lake

Table 20 – Descriptive Statistics for Nitrate in Eighth Lake

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1993	6	1	0.0640	0.0288	0.0129	0.0358
1994	6	0	0.120	0.0867	0.0354	0.0910
1995	6	0	0.0567	0.0612	0.0250	0.0642
1996	6	0	0.0967	0.0804	0.0328	0.0844
1997	6	0	0.107	0.0698	0.0285	0.0732
1998	6	0	0.0717	0.0354	0.0145	0.0372
1999	6	1	0.0640	0.0305	0.0136	0.0379
2000	6	0	0.0617	0.0397	0.0162	0.0417
2001	6	2	0.0475	0.0275	0.0138	0.0438
2002	6	2	0.0275	0.0222	0.0111	0.0353
2003	6	2	0.0250	0.0238	0.0119	0.0379
Year	Range	Max	Min	Median	25%	75%
1993	0.0600	0.1000	0.0400	0.0500	0.0400	0.0925
1994	0.200	0.230	0.0300	0.105	0.0400	0.210
1995	0.140	0.140	0.000	0.0400	0.000	0.120
1996	0.210	0.250	0.0400	0.0700	0.0400	0.110
1997	0.180	0.220	0.0400	0.0950	0.0500	0.140
1998	0.0900	0.130	0.0400	0.0550	0.0500	0.1000
1999	0.0700	0.110	0.0400	0.0500	0.0400	0.0875
2000	0.1000	0.130	0.0300	0.0400	0.0400	0.0900
2001	0.0600	0.0800	0.0200	0.0450	0.0250	0.0700
2002	0.0500	0.0600	0.01000	0.0200	0.0150	0.0400
2003	0.0500	0.0600	0.01000	0.0150	0.01000	0.0400
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1993	0.590	-2.849	0.286	0.194	0.320	0.0238
1994	0.323	-2.227	0.218	0.441	0.720	0.124
1995	0.549	-1.924	0.225	0.399	0.340	0.0380
1996	1.812	3.428	0.267	0.195	0.580	0.0884
1997	0.818	-0.300	0.248	0.279	0.640	0.0926
1998	1.128	-0.183	0.296	0.104	0.430	0.0371
1999	1.044	-0.420	0.277	0.230	0.320	0.0242
2000	1.340	0.541	0.374	0.009	0.370	0.0307
2001	0.323	-3.033	0.237	0.488	0.190	0.0113
2002	1.720	3.265	0.382	0.041	0.110	0.00450
2003	1.779	3.135	0.333	0.127	0.1000	0.00420

Chlorophyll *a*

Figure 28 presents the seasonal mean chlorophyll *a* trend in Eighth Lake, while Table 21 presents descriptive statistics for chlorophyll *a* in Eighth Lake. The chlorophyll *a* in Eighth Lake exhibits a slight trend of increasing values up to 2001, followed by a decrease in concentration in 2002 and 2003. The chlorophyll *a* in Eighth Lake was slightly lower than the county average, though this difference was not statistically significant.

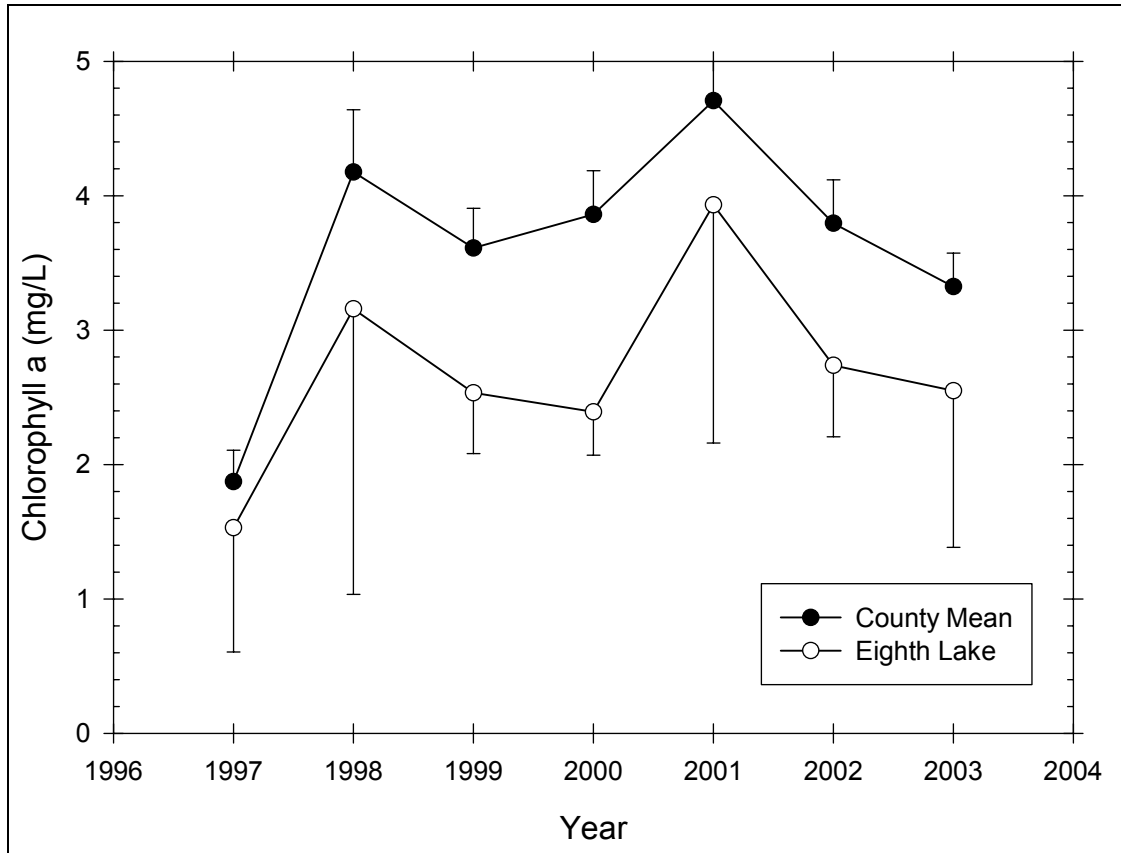


Figure 28 Seasonal mean chlorophyll a trend in Eighth Lake

Table 21 – Descriptive Statistics for Chlorophyll a in Eighth Lake

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1997	6	0	1.530	0.882	0.360	0.925
1998	6	0	3.158	2.025	0.827	2.125
1999	6	1	2.534	0.364	0.163	0.452
2000	6	1	2.392	0.260	0.116	0.323
2001	6	2	3.932	1.114	0.557	1.772
2002	6	2	2.737	0.334	0.167	0.531
2003	6	2	2.550	0.733	0.366	1.166
Year	Range	Max	Min	Median	25%	75%
1997	2.450	3.260	0.810	1.225	1.100	1.560
1998	5.190	6.470	1.280	2.395	1.650	4.760
1999	0.860	3.180	2.320	2.420	2.328	2.610
2000	0.630	2.780	2.150	2.390	2.158	2.555
2001	2.150	5.010	2.860	3.930	2.975	4.890
2002	0.750	3.130	2.380	2.720	2.470	3.005
2003	1.600	3.470	1.870	2.430	1.965	3.135
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1997	2.043	4.505	0.320	0.055	9.180	17.931
1998	1.065	-0.206	0.309	0.076	18.950	80.353
1999	2.141	4.662	0.423	0.004	12.670	32.636
2000	0.768	-0.0701	0.214	0.532	11.960	28.879

2001	0.00326	-5.561	0.275	0.322	15.730	65.581
2002	0.217	-2.325	0.203	0.624	10.950	30.309
2003	0.613	-2.042	0.248	0.440	10.200	27.621

Transparency

Figure 29 presents the seasonal mean transparency trend in Eighth Lake, while Table 22 presents descriptive statistics for transparency in Eighth Lake. The transparency in Eighth Lake exhibits no distinct trend over the period of study, with values varying from year to year but generally remaining steady. The transparency in Eighth Lake was slightly higher than the county average, though this difference was not statistically significant.

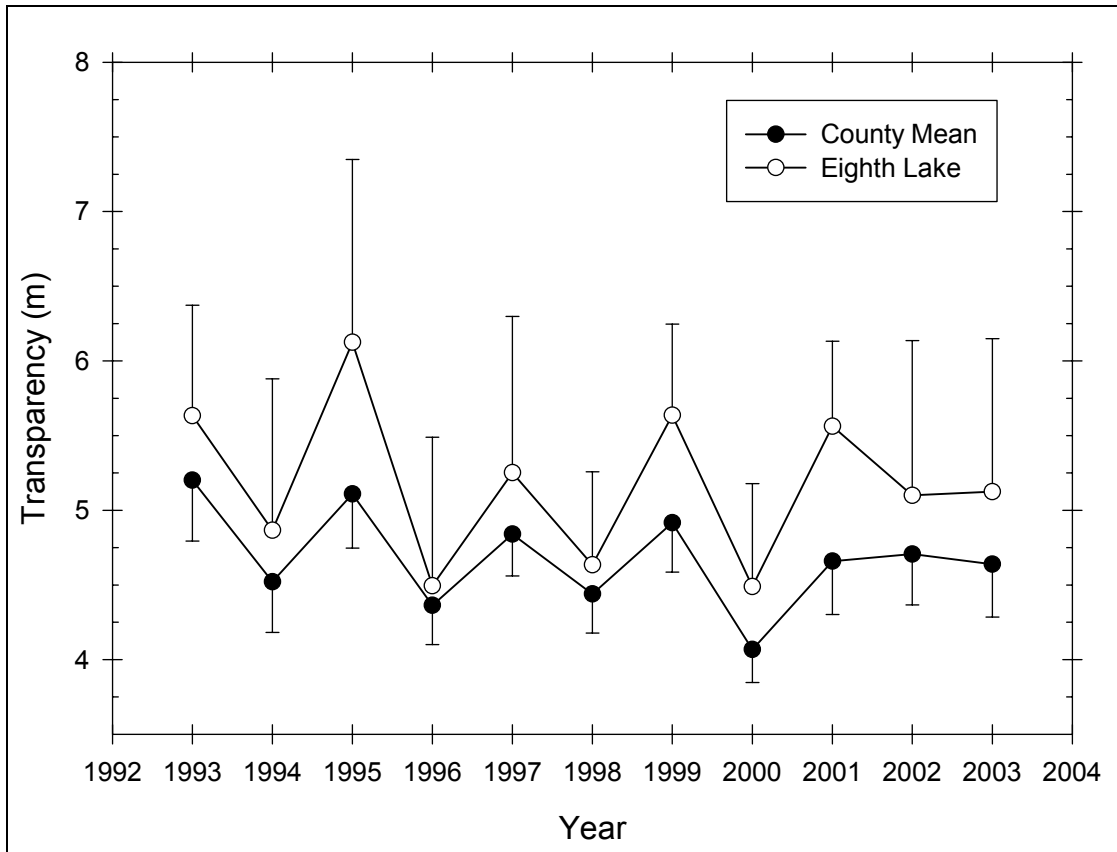


Figure 29 Seasonal mean transparency in Eighth Lake

Table 22 – Descriptive Statistics for Transparency in Eighth Lake

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1993	6	1	5.634	0.739	0.330	0.917
1994	6	0	4.867	1.013	0.414	1.063
1995	6	0	6.125	1.224	0.500	1.285
1996	6	0	4.495	0.995	0.406	1.044
1997	6	0	5.252	1.047	0.427	1.098
1998	6	0	4.635	0.624	0.255	0.655
1999	5	0	5.636	0.611	0.273	0.759

2000	6	0	4.490	0.689	0.281	0.723
2001	4	0	5.563	0.571	0.285	0.908
2002	4	0	5.100	1.036	0.518	1.649
2003	4	0	5.125	1.024	0.512	1.630
Year	Range	Max	Min	Median	25%	75%
1993	1.820	6.360	4.540	5.760	5.110	6.247
1994	2.800	6.700	3.900	4.550	4.200	5.300
1995	3.350	7.100	3.750	6.575	5.950	6.800
1996	2.630	5.850	3.220	4.325	3.820	5.430
1997	2.950	6.550	3.600	5.055	5.030	6.220
1998	1.750	5.700	3.950	4.515	4.200	4.930
1999	1.370	6.320	4.950	5.900	5.010	6.065
2000	1.730	5.330	3.600	4.250	4.200	5.310
2001	1.300	6.300	5.000	5.475	5.125	6.000
2002	2.400	6.500	4.100	4.900	4.350	5.850
2003	2.400	6.400	4.000	5.050	4.350	5.900
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1993	-0.797	-0.308	0.182	0.669	28.170	160.893
1994	1.435	2.002	0.270	0.184	29.200	147.240
1995	-1.957	4.041	0.287	0.128	36.750	232.587
1996	0.263	-1.245	0.160	0.725	26.970	126.181
1997	-0.376	0.263	0.249	0.274	31.510	170.958
1998	1.006	0.940	0.159	0.728	27.810	130.844
1999	-0.304	-2.675	0.267	0.271	28.180	160.316
2000	0.352	-1.306	0.275	0.166	26.940	123.335
2001	0.700	-0.742	0.208	0.606	22.250	124.743
2002	0.971	0.690	0.212	0.593	20.400	107.260
2003	0.368	-0.531	0.161	0.708	20.500	108.210

TSI

Figure 30 presents the Carlson trophic state index trend in Eighth Lake. Transparency TSI values hovered around the oligotrophic-mesotrophic boundary, while chlorophyll TSI values were in the upper mesotrophic to eutrophic range and total phosphorus TSI values exhibited a decrease from near eutrophic well into the oligotrophic range.

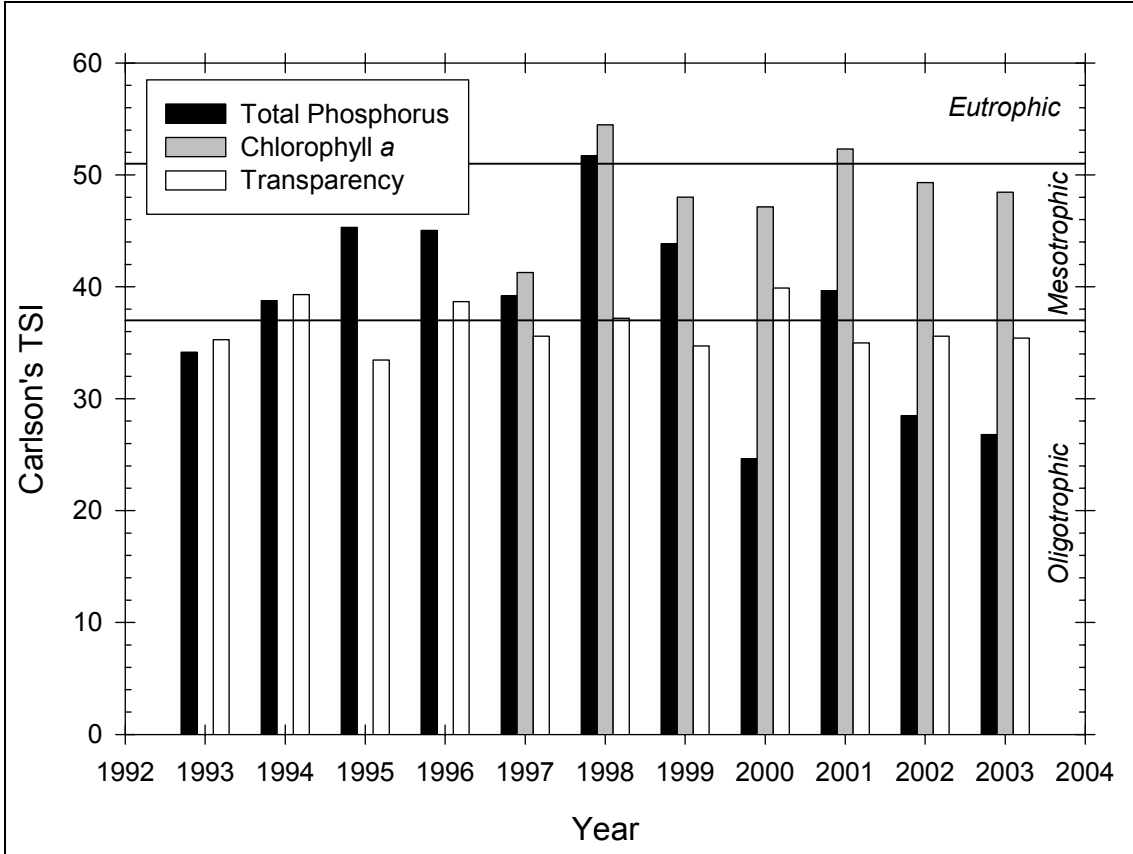


Figure 30 Carlson TSI trend in Eighth Lake

Aluminum

Figure 31 presents the seasonal mean aluminum trend in Eighth Lake, while Table 23 presents descriptive statistics for aluminum in Eighth Lake. The aluminum in Eighth Lake exhibited a decrease from 1997 to 2000, followed by steady conditions. The aluminum in Eighth Lake was slightly lower than the county average, though this difference was not statistically significant.

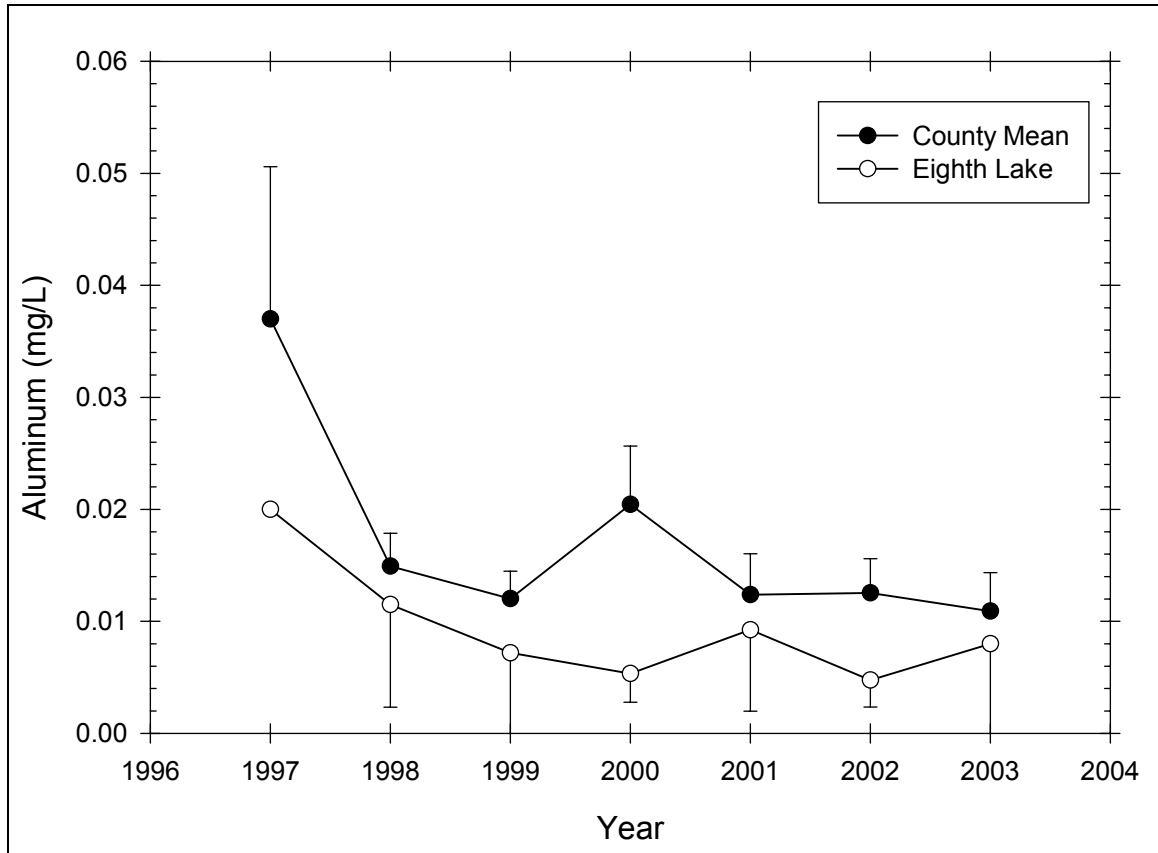


Figure 31 Seasonal mean aluminum trend in Eighth Lake

Table 23 – Descriptive Statistics for Aluminum in Eighth Lake

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1997	6	5	0.0200	--	--	--
1998	6	0	0.0115	0.00873	0.00357	0.00917
1999	6	1	0.00720	0.00597	0.00267	0.00742
2000	6	0	0.00533	0.00242	0.000989	0.00254
2001	6	2	0.00925	0.00457	0.00229	0.00728
2002	6	2	0.00475	0.00150	0.000750	0.00239
2003	6	2	0.00800	0.00668	0.00334	0.0106
Year	Range	Max	Min	Median	25%	75%
1997	0.000	0.0200	0.0200	0.0200	0.0200	0.0200
1998	0.0190	0.0210	0.00200	0.0120	0.00300	0.0190
1999	0.0130	0.0150	0.00200	0.00500	0.00200	0.0128
2000	0.00700	0.00900	0.00200	0.00500	0.00400	0.00700
2001	0.01000	0.0140	0.00400	0.00950	0.00550	0.0130
2002	0.00300	0.00600	0.00300	0.00500	0.00350	0.00600
2003	0.0140	0.0180	0.00400	0.00500	0.00450	0.0115
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1997	--	--	--	--	0.0200	0.000400
1998	-0.0378	-2.959	0.272	0.179	0.0690	0.00117
1999	0.573	-2.392	0.244	0.381	0.0360	0.000402
2000	0.305	0.159	0.221	0.421	0.0320	0.000200

2001	-0.196	-3.202	0.226	0.536	0.0370	0.000405
2002	-0.370	-3.901	0.298	0.234	0.0190	0.0000970
2003	1.970	3.906	0.423	0.012	0.0320	0.000390

Calcium

Figure 32 presents the seasonal mean calcium trend in Eighth Lake, while Table 24 presents descriptive statistics for calcium in Eighth Lake. The calcium in Eighth Lake exhibited a steady slight increasing trend from 1997 to 2003. The calcium in Eighth Lake was significantly higher than the county average, though this difference may not be statistically significant for all years.

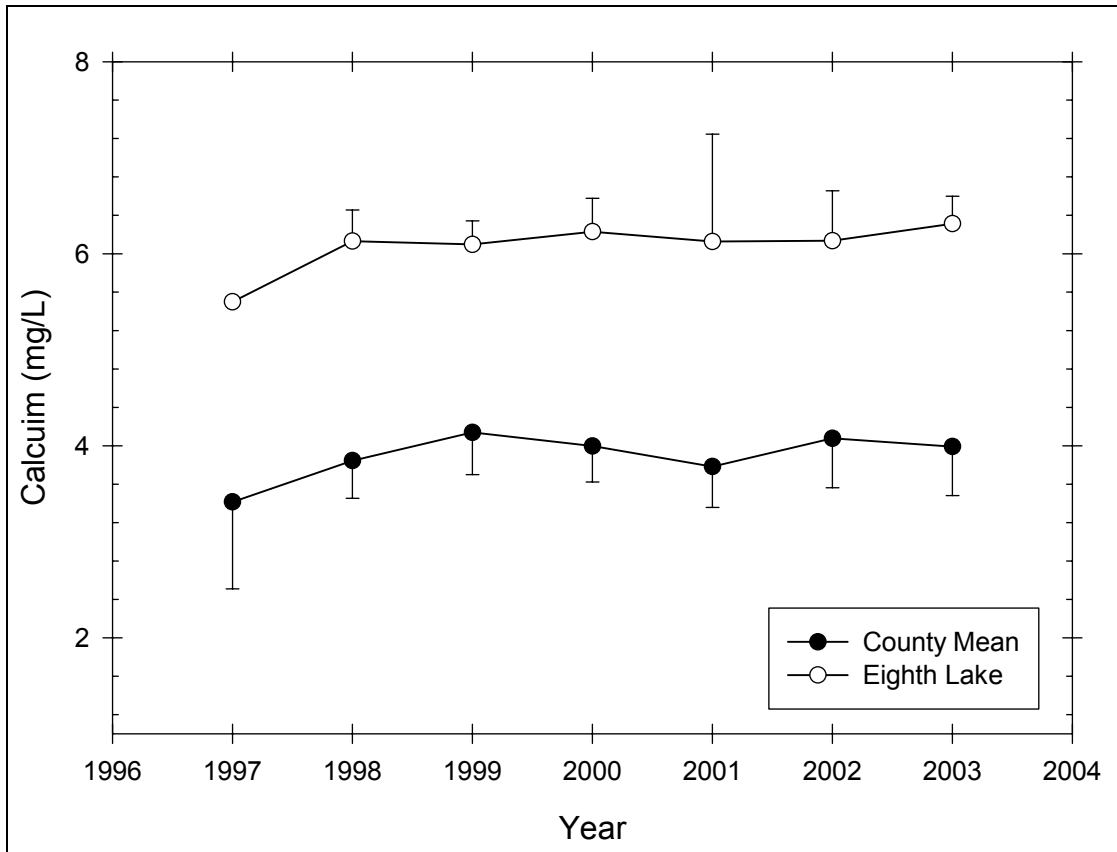


Figure 32 Seasonal mean calcium trend in Eighth Lake

Table 24 – Descriptive Statistics for Calcium in Eighth Lake

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1997	6	5	5.500	--	--	--
1998	6	0	6.132	0.309	0.126	0.324
1999	6	1	6.098	0.197	0.0882	0.245
2000	6	0	6.230	0.331	0.135	0.347
2001	6	2	6.128	0.703	0.351	1.118
2002	6	2	6.135	0.327	0.164	0.520
2003	6	2	6.313	0.180	0.0901	0.287
Year	Range	Max	Min	Median	25%	75%
1997	0.000	5.500	5.500	5.500	5.500	5.500

1998	0.870	6.680	5.810	6.125	5.870	6.180
1999	0.520	6.290	5.770	6.150	6.010	6.215
2000	0.870	6.880	6.010	6.100	6.040	6.250
2001	1.490	6.760	5.270	6.240	5.555	6.700
2002	0.710	6.370	5.660	6.255	5.920	6.350
2003	0.410	6.530	6.120	6.300	6.170	6.455
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1997	--	--	--	--	5.500	30.250
1998	1.156	1.871	0.271	0.181	36.790	226.062
1999	-1.481	2.738	0.284	0.204	30.490	186.084
2000	2.084	4.499	0.309	0.075	37.380	233.424
2001	-0.513	-2.874	0.267	0.356	24.510	151.666
2002	-1.652	2.641	0.305	0.210	24.540	150.874
2003	0.304	-1.802	0.196	0.645	25.250	159.488

Calcite Saturation Index

Figure 33 presents the calcite saturation index trend in Eighth Lake. CSI in Eighth Lake remained within the low vulnerability range throughout the study period. CSI values in Eighth Lake were lower than the county CSI values, although the difference might not be statistically significant.

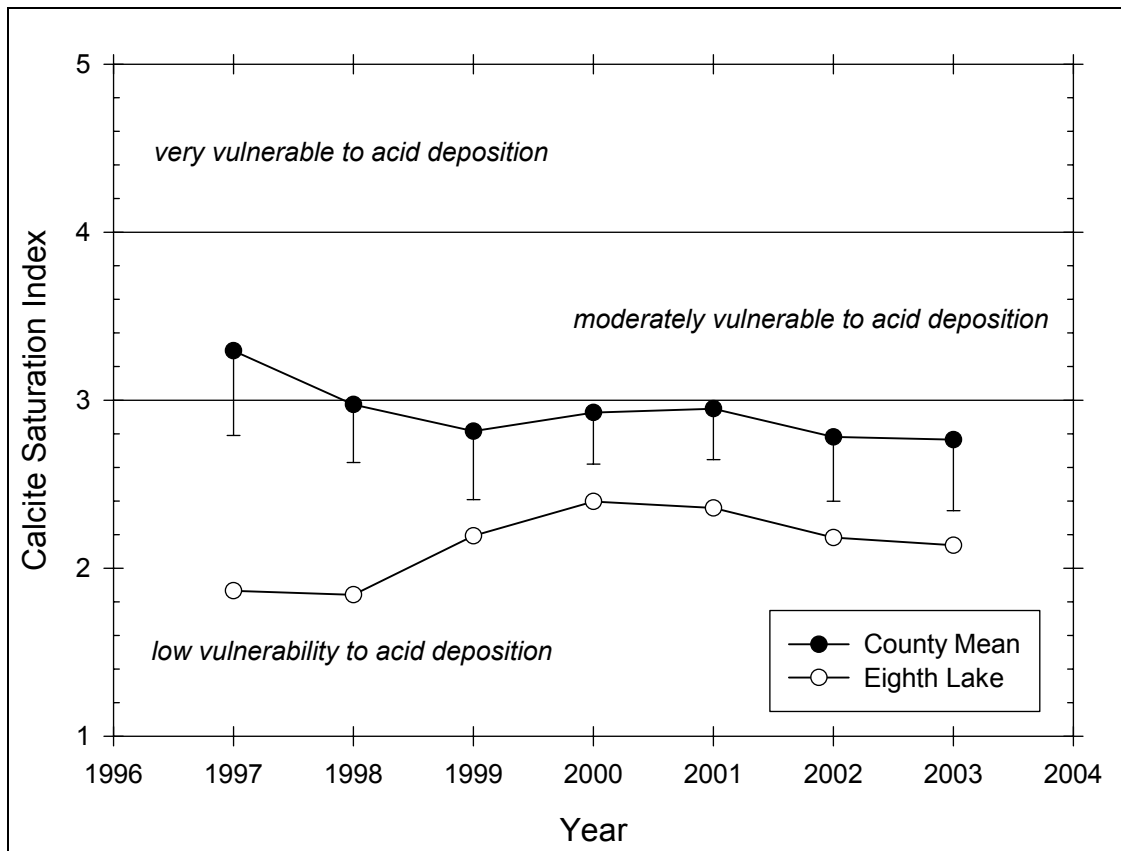


Figure 33 Seasonal mean CSI trend in Eighth Lake