

Lake by Lake Trends

Blue Mountain Lake

Location

Pond Number: 060307
Watershed: St. Lawrence River
County: Hamilton
Topographic Quadrangle: Blue Mountain

Sample Site

Latitude: 43° 51.955'
Longitude: 74° 27.654'

Morphometry

Surface Area: 1,334 A.
Mean Depth: 46 Ft.
Maximum Depth: 100 Ft.
Volume: 61,364 Ac./F.
Watershed Area: 7,130 Ac.
Hydraulic Retention Time: 3.5 Yr.
Shoreline Length: 7.7 Mi.
Elevation: 1,789 Ft.
Water Quality Classification: B(T)
Trophic State: Oligotrophic



Temperature and Dissolved Oxygen

Blue Mountain Lake had a minimum DO of 0.4 mg/L (October 1995), with a minimum temperature of 5.2°C and a maximum temperature of 23.5°C. In general, the lowest DO values occurred during the months of August through October.

pH

Figure 14 presents the seasonal mean pH trend in Blue Mountain Lake, while Table 9 presents descriptive statistics for pH in Blue Mountain Lake. The pH in Blue Mountain Lake exhibits a trend of increasing pH from 1996 to 2001, with stable pH values from 2001 – 2003. The pH in Blue Mountain Lake was slightly higher than the county average, though this difference was not statistically significant.

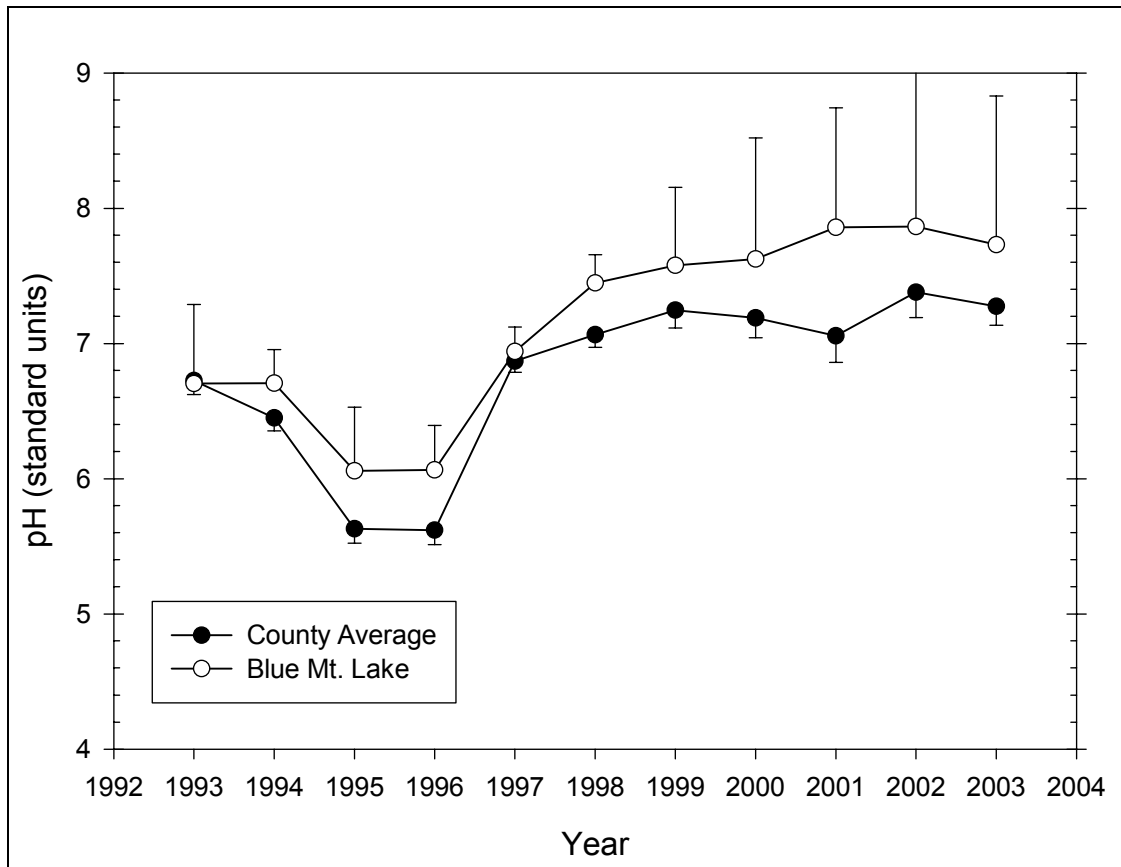


Figure 14 Seasonal mean pH trend in Blue Mountain Lake

Table 9 – Descriptive Statistics for pH in Blue Mountain Lake

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1993	6	1	6.704	0.472	0.211	0.586
1994	6	0	6.707	0.237	0.0967	0.249
1995	6	0	6.058	0.449	0.183	0.472
1996	6	0	6.065	0.313	0.128	0.329
1997	6	0	6.940	0.174	0.0709	0.182
1998	6	0	7.448	0.198	0.0807	0.208
1999	5	0	7.578	0.465	0.208	0.577
2000	6	0	7.625	0.854	0.349	0.896
2001	4	0	7.860	0.555	0.278	0.883
2002	4	0	7.865	0.776	0.388	1.235
2003	4	0	7.730	0.692	0.346	1.100
Year	Range	Max	Min	Median	25%	75%
1993	1.220	7.170	5.950	6.740	6.467	7.057
1994	0.640	6.950	6.310	6.740	6.580	6.920
1995	1.150	6.470	5.320	6.195	5.740	6.430
1996	0.740	6.510	5.770	5.985	5.790	6.350
1997	0.460	7.140	6.680	6.945	6.820	7.110
1998	0.580	7.790	7.210	7.395	7.360	7.540
1999	1.120	8.150	7.030	7.660	7.150	7.933
2000	2.040	8.920	6.880	7.470	6.910	8.100

2001	1.310	8.410	7.100	7.965	7.480	8.240
2002	1.780	8.530	6.750	8.090	7.370	8.360
2003	1.670	8.660	6.990	7.635	7.290	8.170
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1993	-1.174	1.584	0.246	0.369	33.520	225.609
1994	-0.908	0.553	0.206	0.509	40.240	270.157
1995	-0.996	-0.1000	0.204	0.522	36.350	221.230
1996	0.536	-1.807	0.254	0.254	36.390	221.196
1997	-0.365	-0.714	0.169	0.691	41.640	289.133
1998	1.014	1.536	0.263	0.212	44.690	333.062
1999	-0.0533	-1.942	0.198	0.606	37.890	287.995
2000	0.579	-1.347	0.299	0.097	45.750	352.488
2001	-1.027	1.500	0.250	0.432	31.440	248.043
2002	-1.506	2.607	0.314	0.180	31.460	249.240
2003	0.799	1.781	0.279	0.307	30.920	240.446

Alkalinity

Figure 15 presents the seasonal mean alkalinity trend in Blue Mountain Lake, while Table 10 presents descriptive statistics for alkalinity in Blue Mountain Lake. The alkalinity in Blue Mountain Lake exhibits no distinct trend over the period of study. The alkalinity in Blue Mountain Lake was slightly lower than the county average, though this difference was not statistically significant.

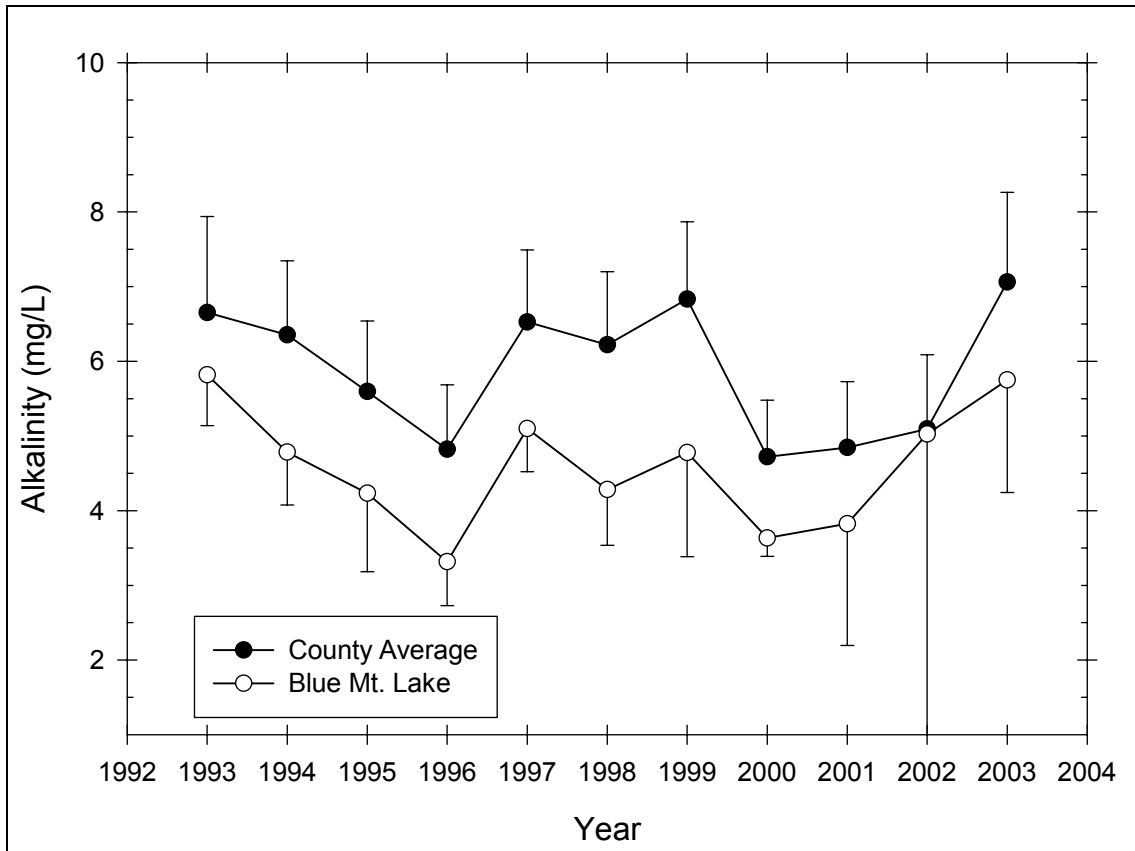


Figure 15 Seasonal mean alkalinity trend in Blue Mountain Lake

Table 10 – Descriptive Statistics for Alkalinity in Blue Mountain Lake

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1993	6	1	5.820	0.550	0.246	0.682
1994	6	0	4.783	0.674	0.275	0.707
1995	6	0	4.233	1.001	0.409	1.051
1996	6	0	3.317	0.560	0.229	0.588
1997	6	0	5.100	0.551	0.225	0.579
1998	6	0	4.283	0.711	0.290	0.746
1999	6	1	4.780	1.123	0.502	1.395
2000	6	0	3.633	0.234	0.0955	0.245
2001	6	2	3.825	1.024	0.512	1.630
2002	6	2	5.025	3.046	1.523	4.846
2003	6	2	5.750	0.947	0.473	1.507
Year	Range	Max	Min	Median	25%	75%
1993	1.500	6.600	5.100	5.800	5.475	6.150
1994	2.000	5.600	3.600	4.800	4.700	5.200
1995	2.700	5.200	2.500	4.400	3.800	5.100
1996	1.500	4.000	2.500	3.500	2.800	3.600
1997	1.500	5.700	4.200	5.300	4.700	5.400
1998	2.000	5.400	3.400	4.100	3.900	4.800
1999	2.800	5.600	2.800	5.200	4.525	5.300
2000	0.600	3.900	3.300	3.600	3.500	3.900
2001	2.500	5.100	2.600	3.800	3.150	4.500
2002	6.700	9.500	2.800	3.900	3.150	6.900
2003	2.300	6.900	4.600	5.750	5.100	6.400
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1993	0.242	0.803	0.172	0.702	29.100	170.570
1994	-1.021	2.035	0.284	0.137	28.700	139.550
1995	-1.101	1.073	0.167	0.699	25.400	112.540
1996	-0.542	-0.935	0.226	0.397	19.900	67.570
1997	-0.934	0.0186	0.239	0.328	30.600	157.580
1998	0.635	-0.0547	0.213	0.467	25.700	112.610
1999	-2.066	4.475	0.412	0.006	23.900	119.290
2000	-0.0365	-0.915	0.223	0.410	21.800	79.480
2001	0.144	1.323	0.221	0.558	15.300	61.670
2002	1.762	3.206	0.344	0.102	20.100	128.830
2003	0.000	1.007	0.187	0.669	23.000	134.940

Total Phosphorus

Figure 16 presents the seasonal mean total phosphorus trend in Blue Mountain Lake, while Table 11 presents descriptive statistics for total phosphorus in Blue Mountain Lake. The total phosphorus in Blue Mountain Lake exhibits a slight decreasing trend, particularly from 1997 to 2003. The total phosphorus in Blue Mountain Lake was slightly lower than the county average, though this difference was not statistically significant.

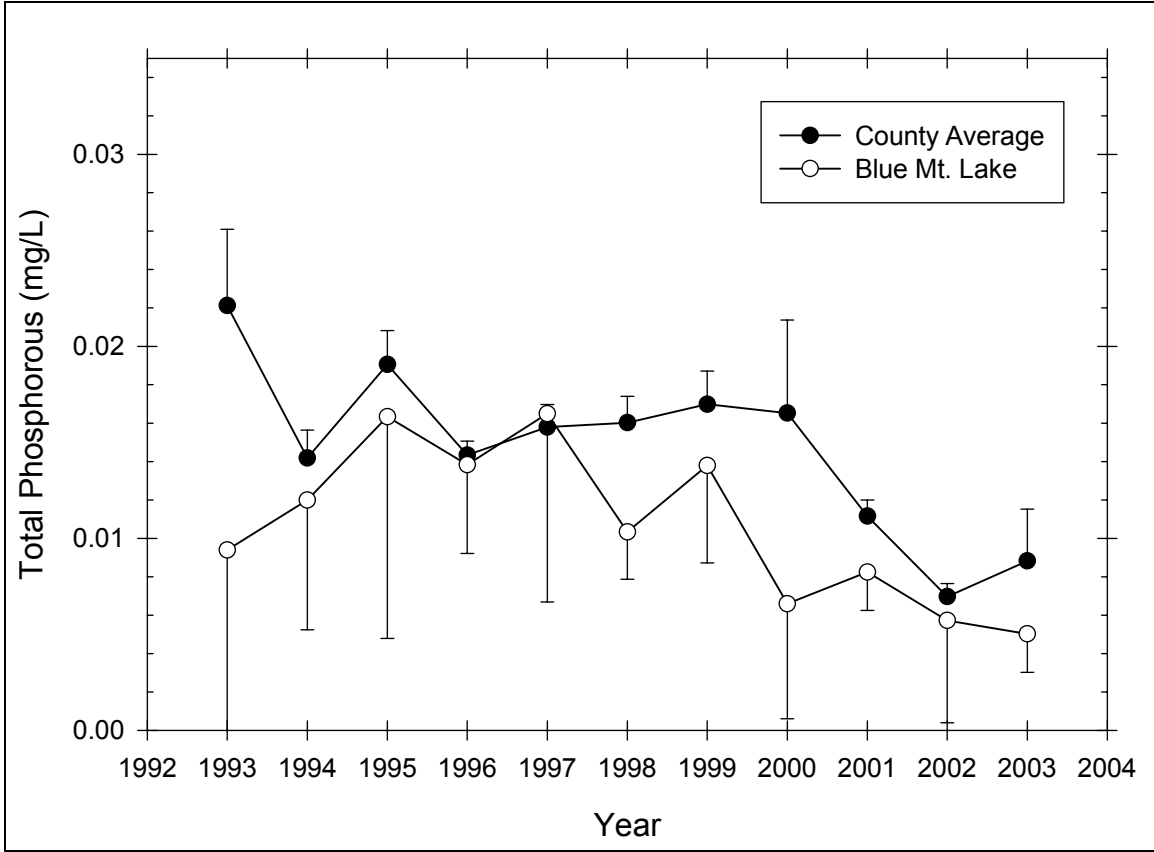


Figure 16 Seasonal mean total phosphorus in Blue Mountain Lake

Table 11 – Descriptive Statistics for Total Phosphorus in Blue Mountain Lake

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1993	6	1	0.00940	0.00974	0.00435	0.0121
1994	6	0	0.0120	0.00645	0.00263	0.00677
1995	6	0	0.0163	0.0110	0.00449	0.0115
1996	6	0	0.0138	0.00440	0.00180	0.00462
1997	6	0	0.0165	0.00935	0.00382	0.00982
1998	6	0	0.0103	0.00234	0.000955	0.00245
1999	6	1	0.0138	0.00409	0.00183	0.00507
2000	6	1	0.00660	0.00483	0.00216	0.00599
2001	6	2	0.00825	0.00126	0.000629	0.00200
2002	6	2	0.00573	0.00335	0.00168	0.00534
2003	6	2	0.00503	0.00126	0.000629	0.00200
Year	Range	Max	Min	Median	25%	75%
1993	0.0200	0.0210	0.001000	0.00300	0.00250	0.0195
1994	0.0190	0.0240	0.00500	0.0105	0.00900	0.0130
1995	0.0300	0.0360	0.00600	0.0140	0.00800	0.0200
1996	0.0120	0.0200	0.00800	0.0145	0.01000	0.0160
1997	0.0250	0.0350	0.01000	0.0135	0.0110	0.0160
1998	0.00700	0.0130	0.00600	0.0110	0.01000	0.0110
1999	0.01000	0.0190	0.00900	0.0120	0.0113	0.0175
2000	0.01000	0.0110	0.001000	0.00800	0.00175	0.0110
2001	0.00300	0.01000	0.00700	0.00800	0.00750	0.00900
2002	0.00810	0.0101	0.00200	0.00540	0.00345	0.00800

2003	0.00250	0.00630	0.00380	0.00500	0.00395	0.00610
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1993	0.600	-3.141	0.345	0.053	0.0470	0.000821
1994	1.509	3.149	0.272	0.179	0.0720	0.00107
1995	1.311	1.717	0.203	0.526	0.0980	0.00221
1996	-0.00196	-0.904	0.189	0.602	0.0830	0.00125
1997	2.124	4.744	0.355	0.018	0.0990	0.00207
1998	-1.445	3.208	0.279	0.154	0.0620	0.000668
1999	0.312	-1.780	0.270	0.258	0.0690	0.00102
2000	-0.370	-2.970	0.230	0.452	0.0330	0.000311
2001	1.129	2.227	0.329	0.138	0.0330	0.000277
2002	0.557	1.252	0.229	0.523	0.0229	0.000165
2003	0.0378	-5.231	0.269	0.349	0.0201	0.000106

Nitrate

Figure 17 presents the seasonal mean nitrate trend in Blue Mountain Lake, while Table 12 presents descriptive statistics for nitrate in Blue Mountain Lake. The nitrate in Blue Mountain Lake exhibits a marked trend of decreasing concentration, particularly between 1994 - 2002. The nitrate in Blue Mountain Lake was slightly lower than the county average, though this difference was not statistically significant.

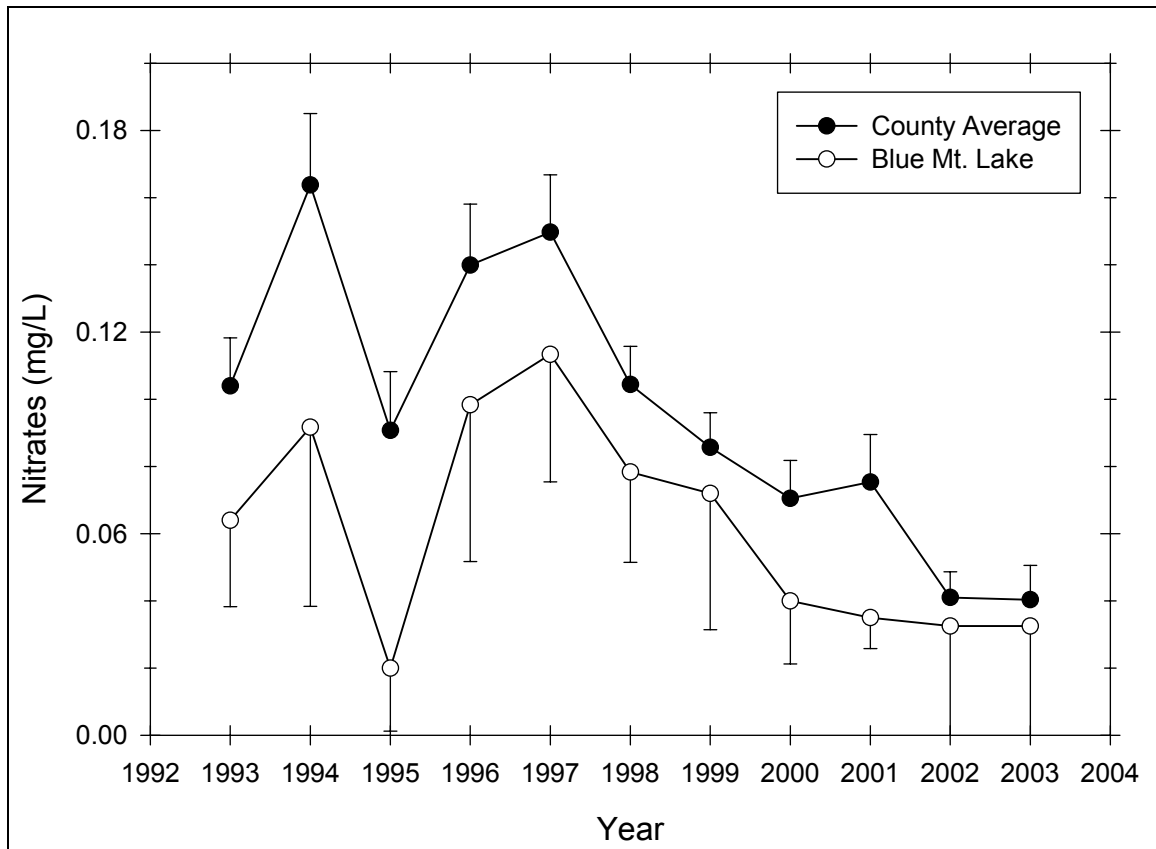


Figure 17 Seasonal mean nitrate trend in Blue Mountain Lake

Table 12 – Descriptive Statistics for Nitrate in Blue Mountain Lake

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1993	6	1	0.0640	0.0207	0.00927	0.0257
1994	6	0	0.0917	0.0508	0.0207	0.0533
1995	6	0	0.0200	0.0179	0.00730	0.0188
1996	6	0	0.0983	0.0445	0.0182	0.0467
1997	6	0	0.113	0.0361	0.0148	0.0379
1998	6	0	0.0783	0.0256	0.0105	0.0269
1999	6	1	0.0720	0.0327	0.0146	0.0406
2000	6	0	0.0400	0.0179	0.00730	0.0188
2001	6	2	0.0350	0.00577	0.00289	0.00919
2002	6	2	0.0325	0.0206	0.0103	0.0328
2003	6	2	0.0325	0.0263	0.0131	0.0418
Year	Range	Max	Min	Median	25%	75%
1993	0.0500	0.1000	0.0500	0.0600	0.0500	0.0700
1994	0.120	0.160	0.0400	0.0850	0.0400	0.140
1995	0.0500	0.0500	0.000	0.0150	0.01000	0.0300
1996	0.120	0.170	0.0500	0.0950	0.0600	0.120
1997	0.0900	0.160	0.0700	0.105	0.0900	0.150
1998	0.0600	0.120	0.0600	0.0650	0.0600	0.1000
1999	0.0800	0.1000	0.0200	0.0900	0.0500	0.0925
2000	0.0500	0.0700	0.0200	0.0350	0.0300	0.0500
2001	0.01000	0.0400	0.0300	0.0350	0.0300	0.0400
2002	0.0400	0.0500	0.01000	0.0350	0.0150	0.0500
2003	0.0500	0.0600	0.01000	0.0300	0.01000	0.0550
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1993	1.918	3.878	0.376	0.020	0.320	0.0222
1994	0.336	-1.849	0.179	0.650	0.550	0.0633
1995	0.943	0.586	0.212	0.475	0.120	0.00400
1996	0.698	-0.0963	0.160	0.724	0.590	0.0679
1997	0.282	-1.875	0.241	0.317	0.680	0.0836
1998	1.131	-0.441	0.294	0.108	0.470	0.0401
1999	-1.294	0.906	0.309	0.124	0.360	0.0302
2000	0.943	0.586	0.212	0.475	0.240	0.0112
2001	-3.701E-015	-6.000	0.307	0.203	0.140	0.00500
2002	-0.200	-4.858	0.302	0.219	0.130	0.00550
2003	0.124	-5.290	0.304	0.212	0.130	0.00630

Chlorophyll a

Figure 18 presents the seasonal mean chlorophyll *a* trend in Blue Mountain Lake, while Table 13 presents descriptive statistics for chlorophyll *a* in Blue Mountain Lake. The chlorophyll *a* in Blue Mountain Lake was relatively constant over the period of study. The chlorophyll *a* in Blue Mountain Lake was significantly lower than the county average, particularly since 1999.

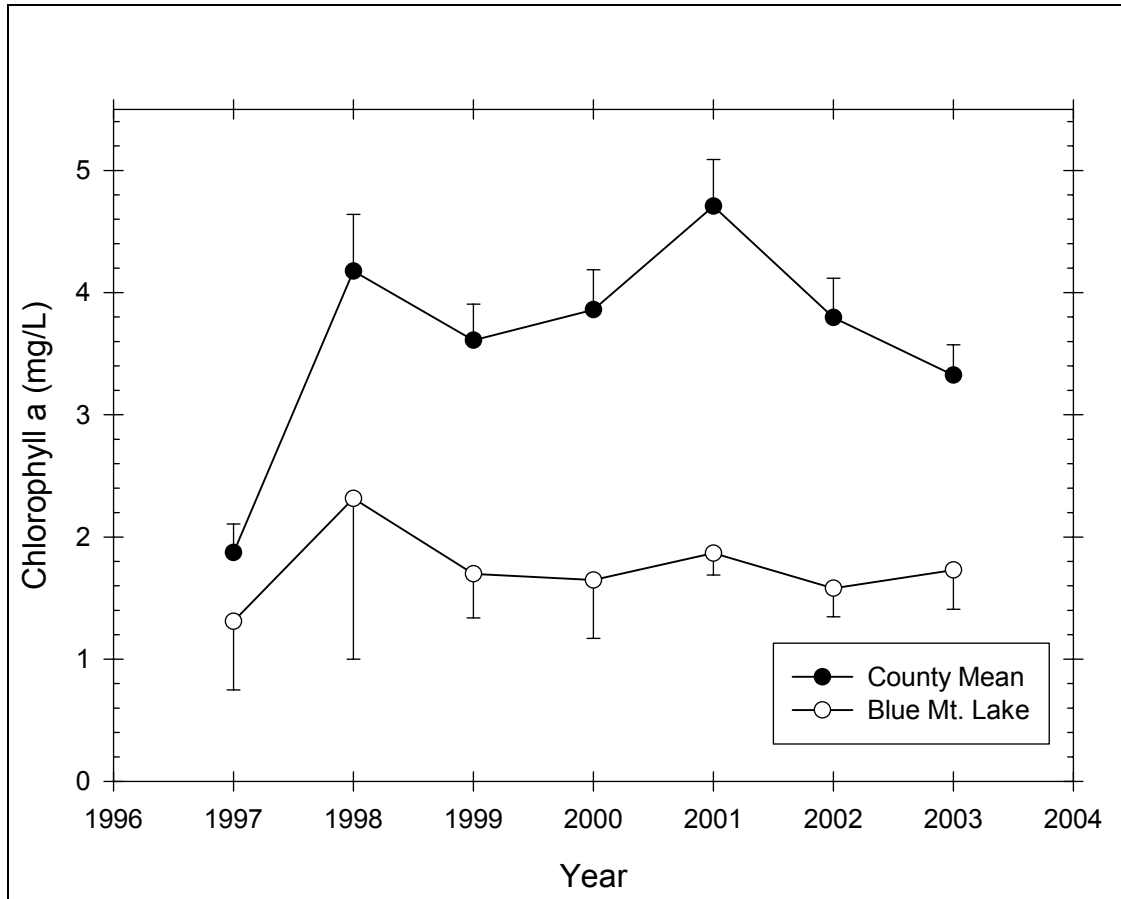


Figure 18 Seasonal mean chlorophyll a trend in Blue Mountain Lake

Table 13 – Descriptive Statistics for Chlorophyll a in Blue Mountain Lake

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1997	6	0	1.310	0.535	0.218	0.561
1998	6	0	2.315	1.253	0.511	1.315
1999	6	1	1.698	0.290	0.130	0.360
2000	6	1	1.648	0.385	0.172	0.478
2001	6	2	1.868	0.113	0.0565	0.180
2002	6	2	1.580	0.146	0.0731	0.233
2003	6	2	1.730	0.202	0.101	0.321
Year	Range	Max	Min	Median	25%	75%
1997	1.390	1.800	0.410	1.425	1.070	1.730
1998	3.380	4.490	1.110	1.810	1.580	3.090
1999	0.800	2.090	1.290	1.710	1.530	1.865
2000	0.950	2.140	1.190	1.520	1.385	1.990
2001	0.250	1.970	1.720	1.890	1.780	1.955
2002	0.290	1.730	1.440	1.575	1.455	1.705
2003	0.480	2.010	1.530	1.690	1.600	1.860
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1997	-0.993	0.294	0.250	0.273	7.860	11.727
1998	1.271	0.939	0.299	0.100	13.890	40.002
1999	-0.129	1.089	0.181	0.674	8.490	14.753

2000	0.278	-1.642	0.230	0.449	8.240	14.172
2001	-0.820	-0.969	0.240	0.478	7.470	13.989
2002	0.0639	-5.225	0.274	0.327	6.320	10.050
2003	1.111	2.038	0.289	0.265	6.920	12.094

Transparency

Figure 19 presents the seasonal mean transparency trend in Blue Mountain Lake, while Table 14 presents descriptive statistics for transparency in Blue Mountain Lake. The transparency in Blue Mountain Lake, although quite variable from year to year, exhibits a slight trend of decreasing transparency from 1994 through 1998 and increasing transparency from 1998 to 2003. The transparency in Blue Mountain Lake was significantly higher than the county average, though this difference was not statistically significant in all years.

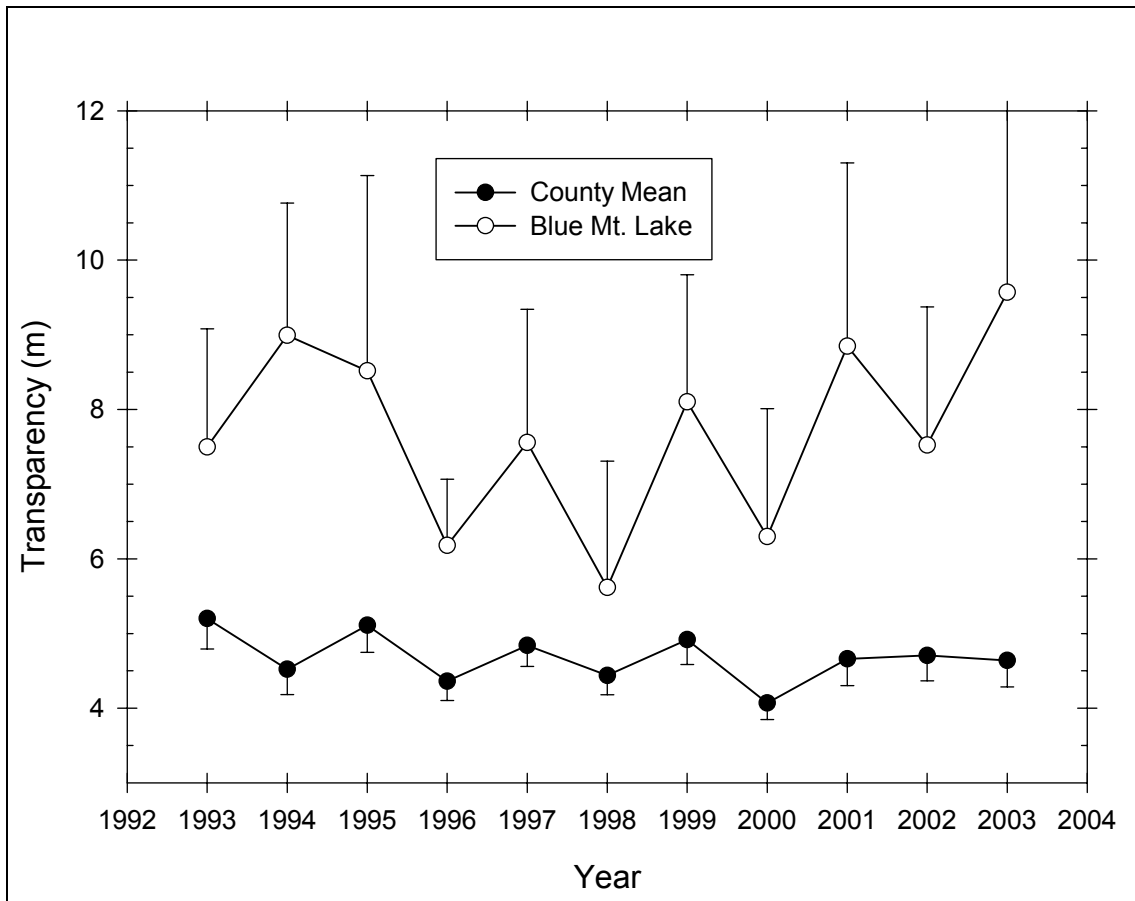


Figure 19 Seasonal mean transparency trend in Blue Mountain Lake

Table 14 – Descriptive Statistics for Transparency in Blue Mountain Lake

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1993	6	1	7.500	1.273	0.569	1.580
1994	6	0	8.992	1.689	0.690	1.773
1995	6	0	8.517	2.493	1.018	2.616

1996	6	0	6.178	0.848	0.346	0.890
1997	6	0	7.557	1.701	0.694	1.785
1998	6	0	5.617	1.611	0.658	1.691
1999	5	0	8.104	1.370	0.613	1.702
2000	6	0	6.298	1.632	0.666	1.713
2001	4	0	8.850	1.542	0.771	2.453
2002	4	0	7.525	1.162	0.581	1.848
2003	4	0	9.570	1.900	0.950	3.024
Year	Range	Max	Min	Median	25%	75%
1993	3.300	9.400	6.100	7.600	6.475	8.200
1994	4.530	11.800	7.270	8.940	7.300	9.700
1995	6.450	11.550	5.100	8.275	7.000	10.900
1996	2.250	7.620	5.370	6.040	5.400	6.600
1997	5.200	10.000	4.800	7.750	6.890	8.150
1998	4.390	7.890	3.500	5.905	4.050	6.450
1999	3.030	9.460	6.430	8.150	6.895	9.438
2000	3.640	7.940	4.300	6.750	4.300	7.750
2001	3.500	11.100	7.600	8.350	7.950	9.750
2002	2.600	8.500	5.900	7.850	6.700	8.350
2003	4.070	12.150	8.080	9.025	8.140	11.000
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1993	0.690	0.353	0.207	0.566	37.500	287.730
1994	0.781	0.581	0.175	0.667	53.950	499.365
1995	-0.0673	-1.512	0.194	0.573	51.100	466.275
1996	1.010	0.733	0.170	0.688	37.070	232.624
1997	-0.392	1.593	0.197	0.559	45.340	357.080
1998	-0.0675	-0.711	0.217	0.447	33.700	202.260
1999	-0.168	-2.486	0.233	0.433	40.520	335.886
2000	-0.560	-1.927	0.223	0.413	37.790	251.336
2001	1.670	3.143	0.365	0.067	35.400	320.420
2002	-1.300	1.304	0.241	0.470	30.100	230.550
2003	1.100	-0.00822	0.265	0.368	38.280	377.171

TSI

Figure 20 presents the Carson Trophic State Index trend in Blue Mountain Lake. Chlorophyll TSI was in the mesotrophic range, while total phosphorus and transparency were well within the oligotrophic range.

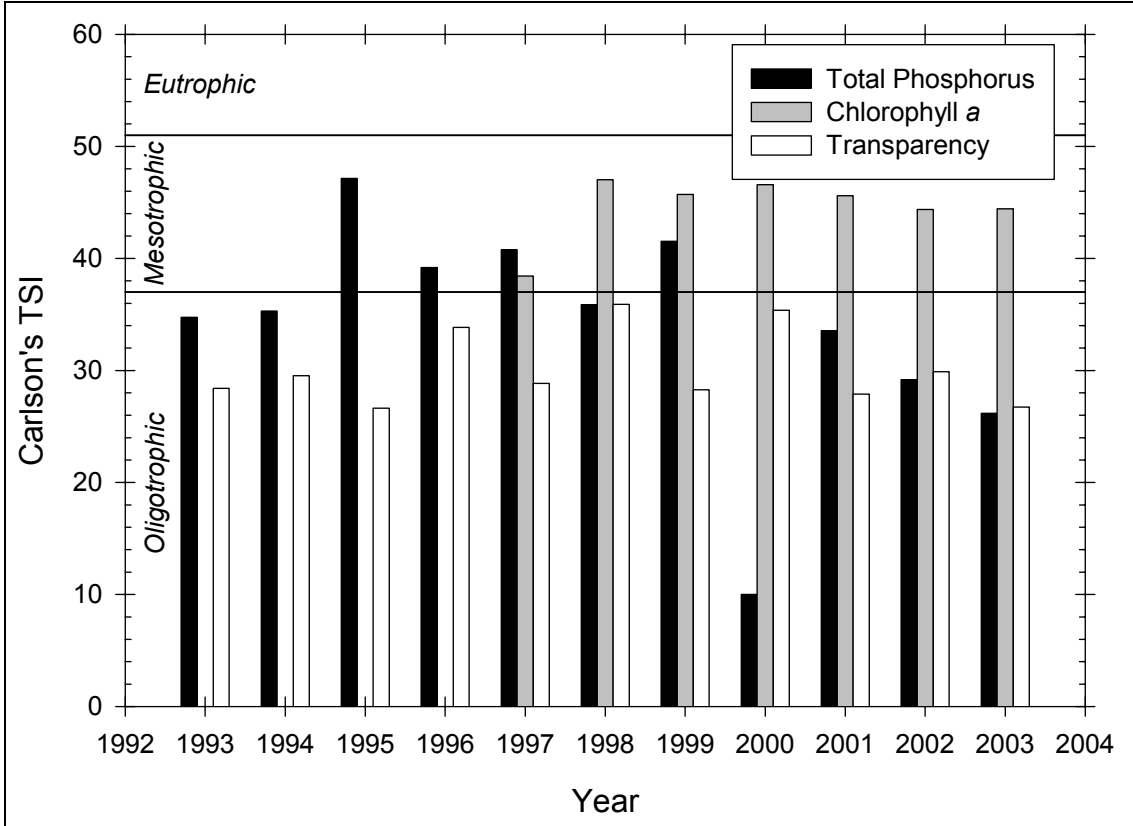


Figure 20 Carlson TSI trend in Blue Mountain Lake

Aluminum

Figure 21 presents the seasonal mean aluminum trend in Blue Mountain Lake, while Table 15 presents descriptive statistics for aluminum in Blue Mountain Lake. The aluminum in Blue Mountain Lake exhibits no distinct trend over the period of study. There appears to be a slight increase in aluminum concentrations in Blue Mountain Lake from 2001 to 2003 (not statistically significant), which contrasts with the county trend. The aluminum in Blue Mountain Lake was slightly lower than the county average, though this difference was not statistically significantly

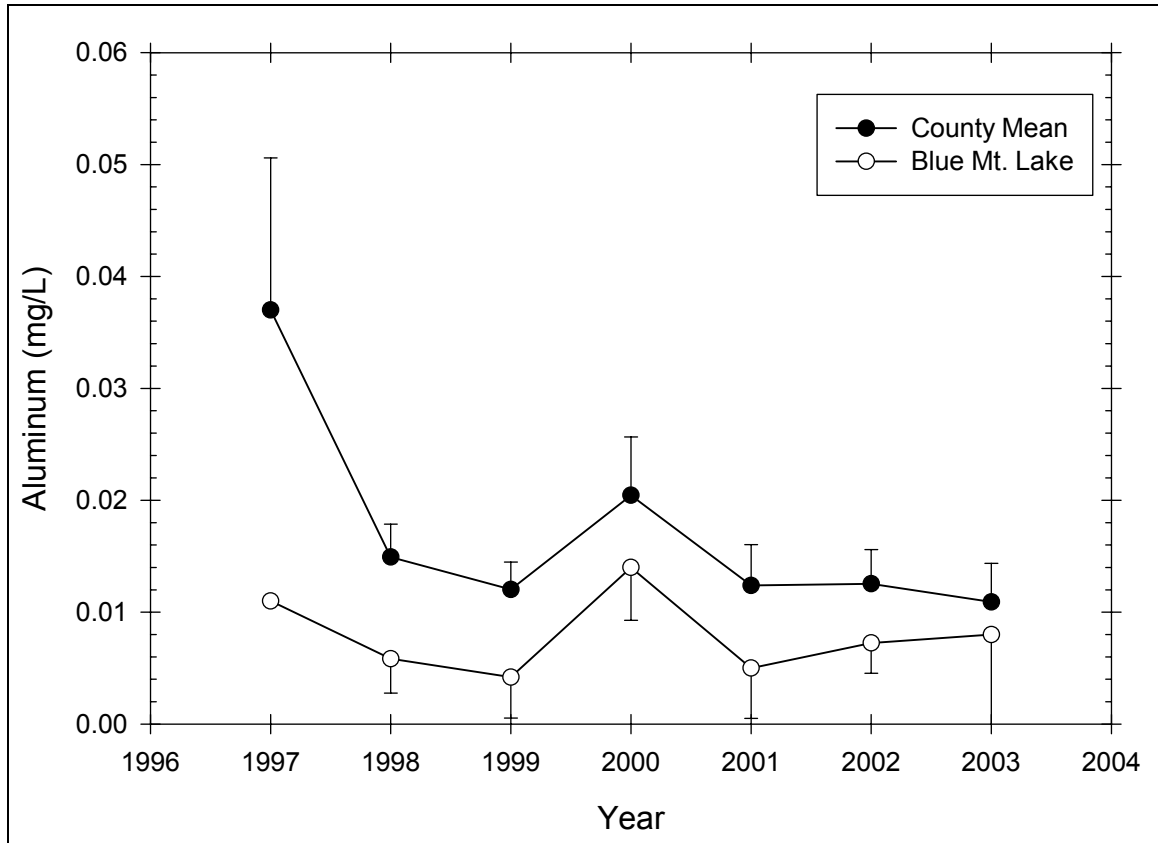


Figure 21 Seasonal mean aluminum trend in Blue Mountain Lake

Table 15 – Descriptive Statistics for Aluminum in Blue Mountain Lake

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1997	6	5	0.0110	--	--	--
1998	6	0	0.00583	0.00293	0.00119	0.00307
1999	6	1	0.00420	0.00295	0.00132	0.00366
2000	6	0	0.0140	0.00452	0.00184	0.00474
2001	6	2	0.00500	0.00283	0.00141	0.00450
2002	6	2	0.00725	0.00171	0.000854	0.00272
2003	6	2	0.00800	0.00668	0.00334	0.0106
Year	Range	Max	Min	Median	25%	75%
1997	0.000	0.0110	0.0110	0.0110	0.0110	0.0110
1998	0.00700	0.00900	0.00200	0.00600	0.00300	0.00900
1999	0.00700	0.00900	0.00200	0.00300	0.00200	0.00600
2000	0.0120	0.0190	0.00700	0.0140	0.0120	0.0180
2001	0.00600	0.00900	0.00300	0.00400	0.00300	0.00700
2002	0.00400	0.00900	0.00500	0.00750	0.00600	0.00850
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	--	--	--	--	0.0110	0.000121
1998	-0.186	-1.657	0.194	0.576	0.0350	0.000247
1999	1.430	1.581	0.258	0.312	0.0210	0.000123
2000	-0.527	-0.649	0.171	0.684	0.0840	0.00128
2001	1.414	1.500	0.260	0.387	0.0200	0.000124

2002	-0.753	0.343	0.192	0.657	0.0290	0.000219
2003	1.970	3.906	0.423	0.012	0.0320	0.000390

Calcium

Figure 22 presents the seasonal mean calcium trend in Blue Mountain Lake, while Table 16 presents descriptive statistics for calcium in Blue Mountain Lake. The calcium in Blue Mountain Lake exhibits no distinct trend over the period of study. The calcium in Blue Mountain Lake was slightly lower than the county average, though this difference was not statistically significant.

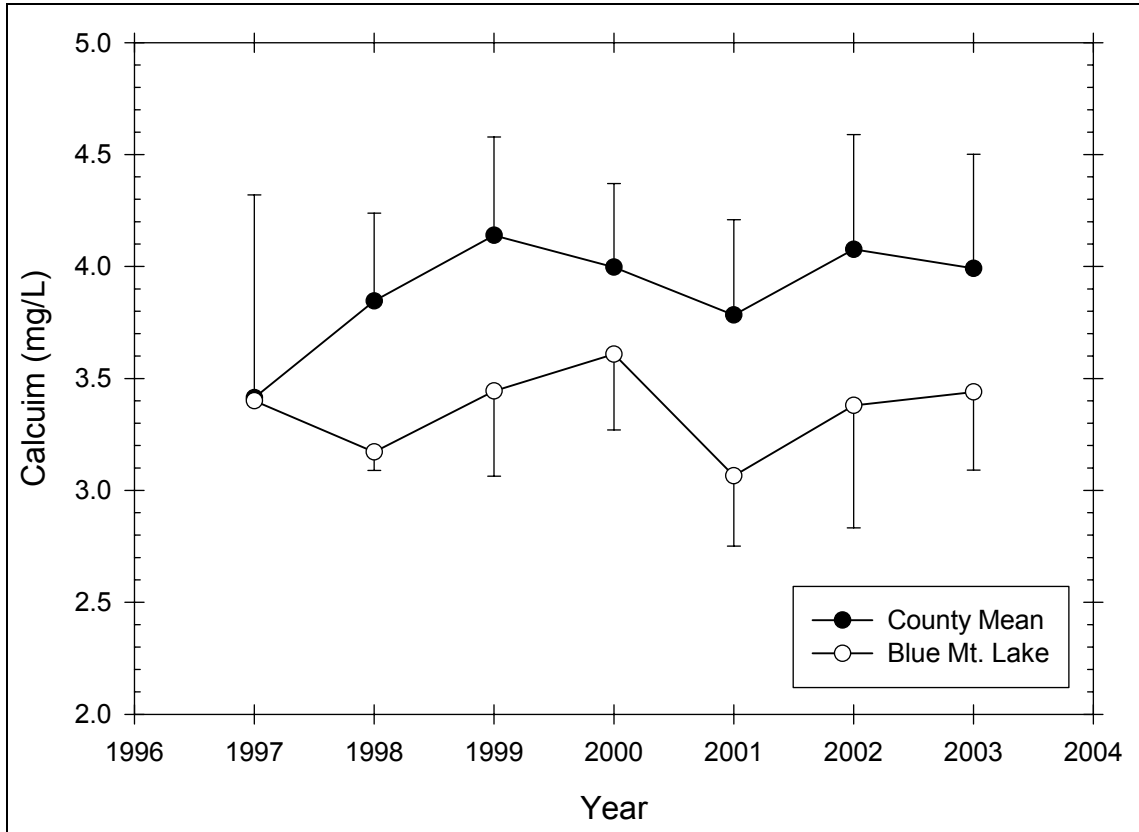


Figure 22 Seasonal mean calcium trend in Blue Mountain Lake

Table 16 – Descriptive Statistics for Calcium in Blue Mountain Lake

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1997	6	5	3.400	--	--	--
1998	6	0	3.172	0.0786	0.0321	0.0825
1999	6	1	3.444	0.307	0.137	0.381
2000	6	0	3.608	0.322	0.132	0.338
2001	6	2	3.065	0.197	0.0985	0.314
2002	6	2	3.380	0.344	0.172	0.547
2003	6	2	3.440	0.220	0.110	0.349
Year	Range	Max	Min	Median	25%	75%
1997	0.000	3.400	3.400	3.400	3.400	3.400
1998	0.190	3.270	3.080	3.170	3.090	3.250

1999	0.720	3.770	3.050	3.510	3.170	3.703
2000	0.790	3.910	3.120	3.715	3.310	3.880
2001	0.410	3.180	2.770	3.155	2.960	3.170
2002	0.750	3.880	3.130	3.255	3.155	3.605
2003	0.480	3.610	3.130	3.510	3.285	3.595
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1997	--	--	--	--	3.400	11.560
1998	0.0720	-1.732	0.184	0.626	19.030	60.388
1999	-0.374	-2.137	0.185	0.658	17.220	59.682
2000	-0.823	-1.115	0.243	0.308	21.650	78.639
2001	-1.976	3.922	0.417	0.015	12.260	37.693
2002	1.658	2.690	0.308	0.199	13.520	46.053
2003	-1.394	1.500	0.250	0.432	13.760	47.479

Calcite Saturation Index

Figure 23 presents the calcite saturation index trend in Blue Mountain Lake. The CSI in Blue Mountain Lake declined considerably between 1997 and 2003, exhibiting a greater decline than the county trend. The CSI in Blue Mountain Lake was consistently lower than in the county lakes, although the difference may not be statistically significant.

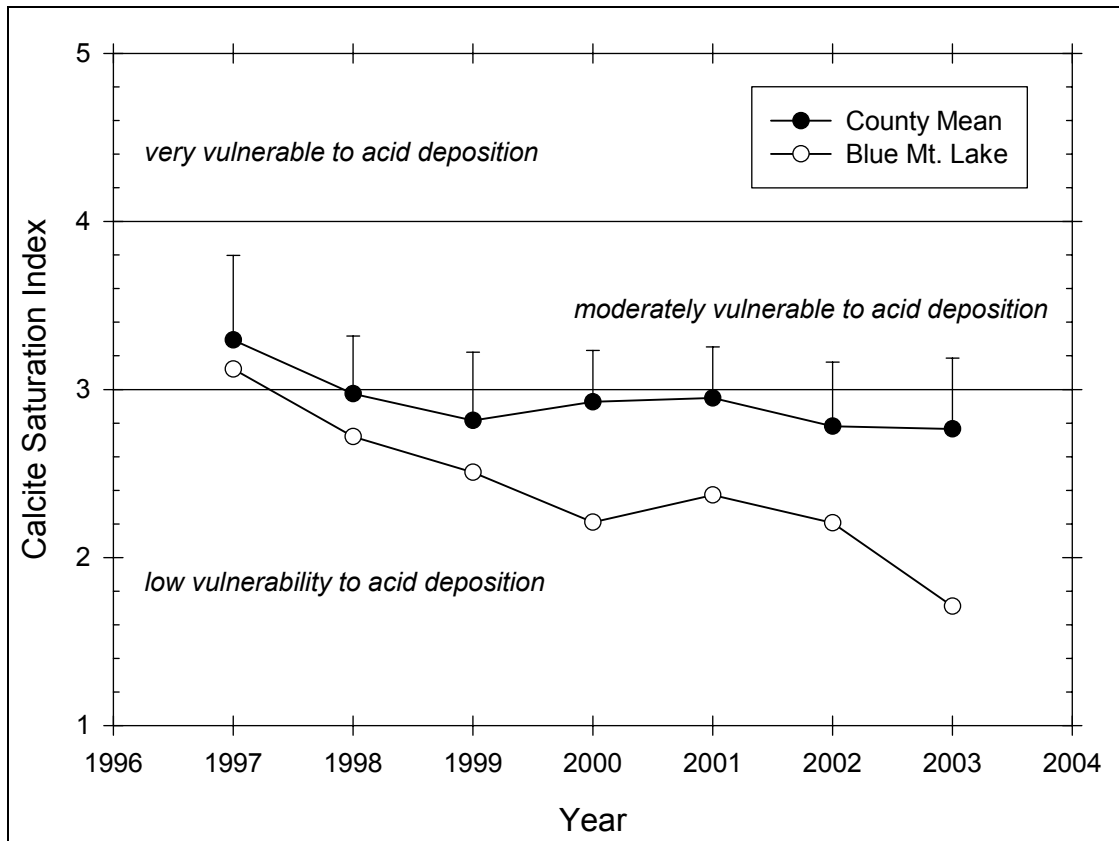


Figure 23 Seasonal mean CSI trend in Blue Mountain Lake