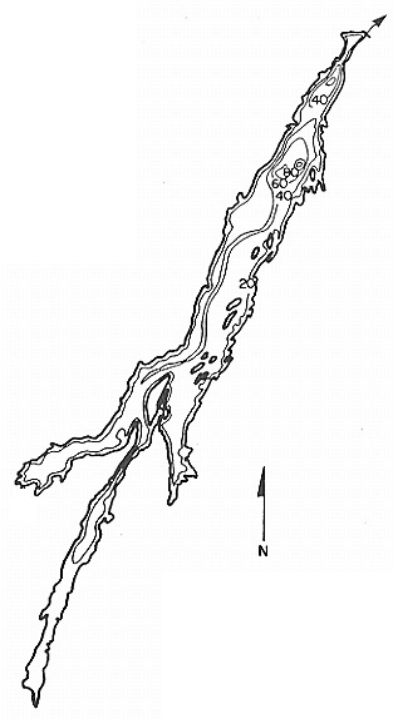
Indian Lake



Location
Pond Number: 050597
Watershed: Upper Hudson River
County: Hamilton
Topographic Quadrangle: Indian Lake
Sample Site
Latitude: 43o 43.418'
Longitude: 74o 18.231'
Morphometry
Surface Area: 4,365 Ac.
Mean Depth: 39 Ft.
Maximum Depth: 85 Ft.
Volume: 170,235 Ac./Ft.
Watershed Area: 83,840 Ac.
Hydraulic Retention Time: 0.9 Yr.
Shoreline Length: 38.7 Mi.
Elevation: 1,650 Ft.

Temperature and Dissolved Oxygen

Indian Lake had a minimum DO of 0.2 mg/L (October 1997), with a minimum temperature of 5.0°C and a maximum temperature of 23.7°C. In general, the lowest DO values occurred during the months of August through October.

pH

Figure 64 presents the seasonal mean pH trend in Indian Lake, while Table 49 presents descriptive statistics for pH in Indian Lake. The pH in Indian Lake exhibited an increasing trend over the study period, following a low in 1995 and 1996. The pH in Indian Lake was similar to the county average.

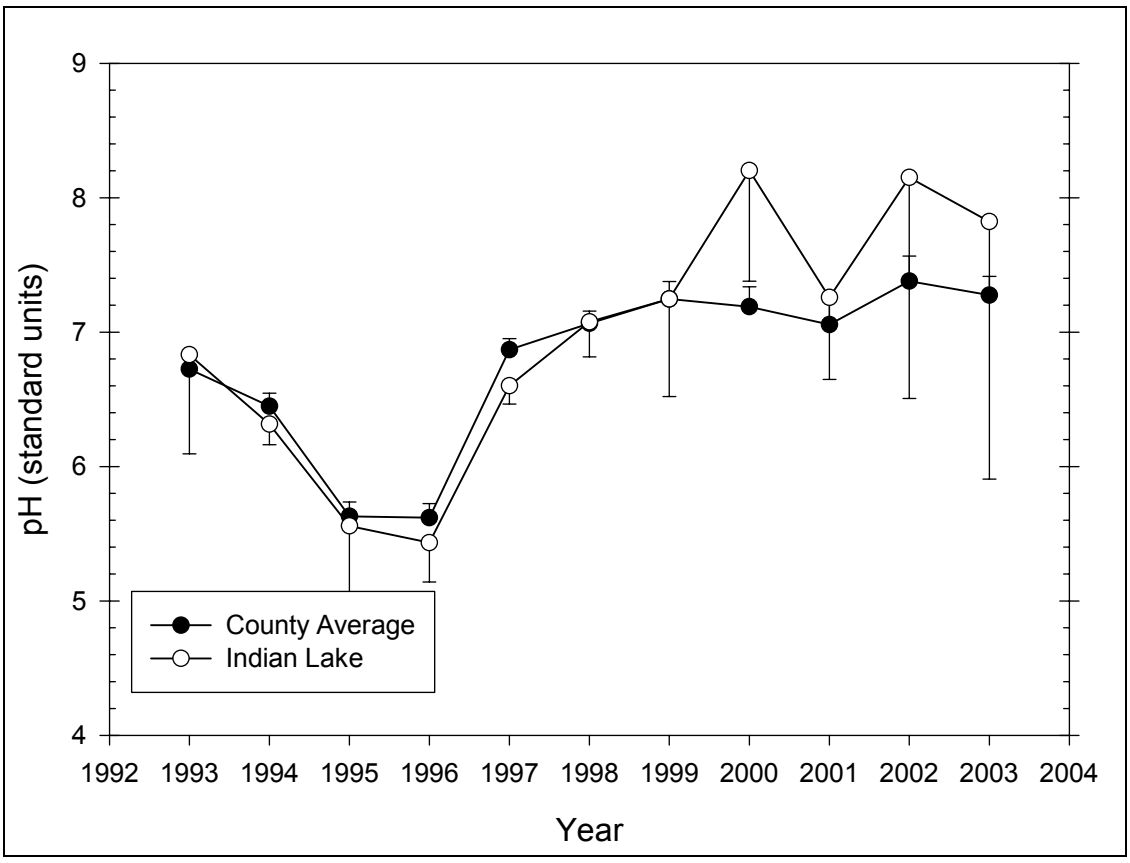


Figure 64 Seasonal mean pH trend in Indian Lake

Table 49 – Descriptive Statistics for pH in Indian Lake

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1993	6	2	6.833	0.463	0.232	0.737
1994	6	0	6.315	0.146	0.0594	0.153
1995	6	0	5.558	0.566	0.231	0.594
1996	6	0	5.433	0.279	0.114	0.293
1997	6	0	6.600	0.129	0.0526	0.135
1998	6	0	7.077	0.248	0.101	0.261
1999	5	0	7.246	0.584	0.261	0.726
2000	6	0	8.202	0.784	0.320	0.823
2001	6	0	7.258	0.582	0.238	0.611
2002	4	0	8.150	1.033	0.517	1.644
2003	4	0	7.822	1.205	0.602	1.917
Year	**Range**	**Max**	**Min**	**Median**	**25%**	**75%**
1993	1.040	7.250	6.210	6.935	6.485	7.180
1994	0.340	6.490	6.150	6.300	6.200	6.450
1995	1.420	6.110	4.690	5.700	5.130	6.020
1996	0.740	5.810	5.070	5.425	5.210	5.660
1997	0.370	6.820	6.450	6.570	6.530	6.660
1998	0.740	7.350	6.610	7.115	7.080	7.190
1999	1.260	7.790	6.530	7.370	6.695	7.790
2000	2.040	9.310	7.270	8.070	7.600	8.890
2001	1.270	8.070	6.800	6.940	6.860	7.940

2002	2.500	9.290	6.790	8.260	7.465	8.835
2003	2.610	9.400	6.790	7.550	6.885	8.760
Year	**Skewness**	**Kurtosis**	**K-S Dist.**	**K-S Prob.**	**Sum**	**Sum of Squares**
1993	-0.988	-0.0125	0.225	0.539	27.330	187.376
1994	0.104	-2.603	0.265	0.206	37.890	239.381
1995	-0.689	-1.065	0.244	0.298	33.350	186.971
1996	0.0775	-1.320	0.131	0.771	32.600	177.516
1997	0.972	1.114	0.179	0.648	39.600	261.443
1998	-1.560	3.539	0.339	0.030	42.460	300.784
1999	-0.345	-2.654	0.224	0.480	36.230	263.889
2000	0.383	-1.366	0.178	0.656	49.210	406.677
2001	0.954	-1.743	0.374	0.009	43.550	317.795
2002	-0.618	1.458	0.246	0.449	32.600	268.892
2003	0.859	-1.086	0.258	0.397	31.290	249.119

Alkalinity

Figure 65 presents the seasonal mean alkalinity trend in Indian Lake, while Table 50 presents descriptive statistics for alkalinity in Indian Lake. The alkalinity in Indian Lake exhibited a steady trend over the study period. The alkalinity in Indian Lake was significantly lower than the county average, though this difference might not be statistically significant for all years.

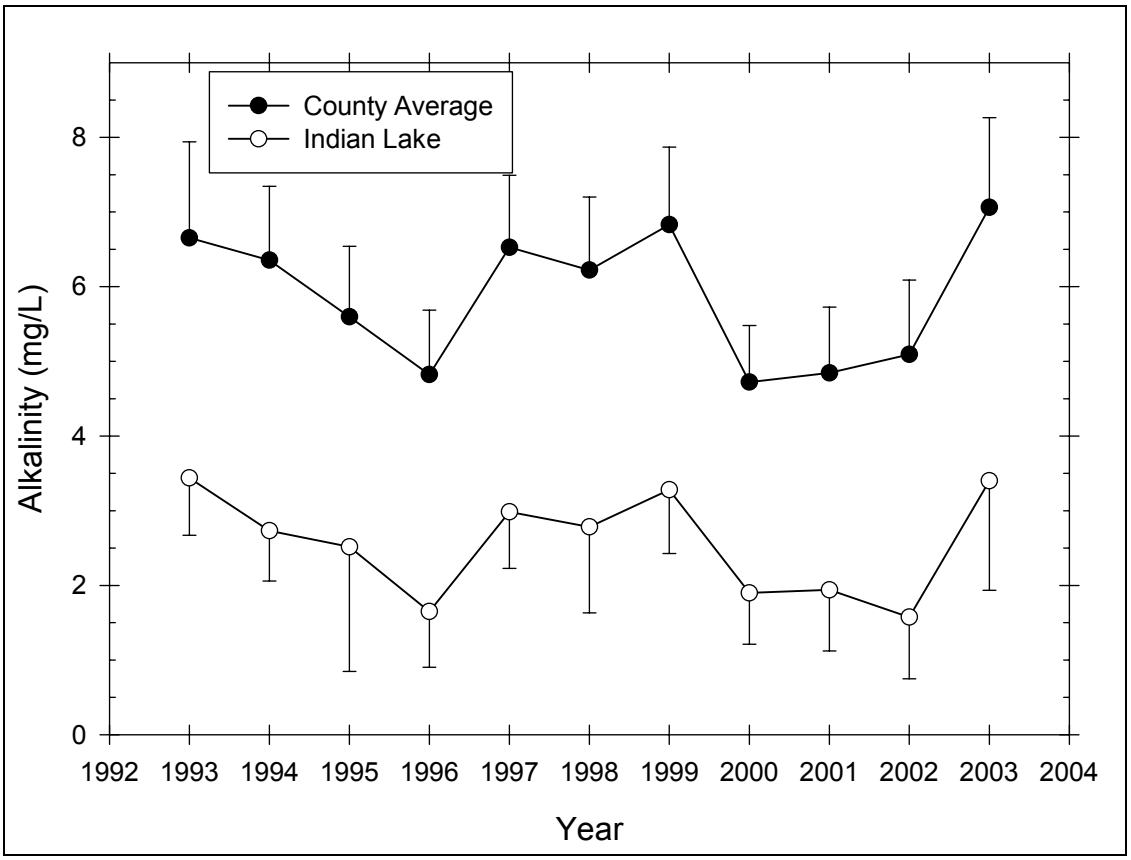


Figure 65 Seasonal mean alkalinity trend in Indian Lake

Table 50 – Descriptive Statistics for Alkalinity in Indian Lake

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1993	6	1	3.440	0.619	0.277	0.768
1994	6	0	2.733	0.644	0.263	0.676
1995	6	0	2.517	1.590	0.649	1.669
1996	6	0	1.650	0.712	0.291	0.747
1997	6	0	2.983	0.719	0.294	0.755
1998	6	0	2.783	1.098	0.448	1.152
1999	6	1	3.280	0.687	0.307	0.853
2000	6	0	1.900	0.654	0.267	0.687
2001	6	1	1.940	0.658	0.294	0.817
2002	6	2	1.575	0.519	0.259	0.826
2003	6	2	3.400	0.920	0.460	1.464
Year	**Range**	**Max**	**Min**	**Median**	**25%**	**75%**
1993	1.500	4.200	2.700	3.400	2.925	3.975
1994	1.500	3.600	2.100	2.550	2.200	3.400
1995	4.300	3.800	-0.500	2.800	2.400	3.800
1996	2.100	2.800	0.700	1.650	1.200	1.900
1997	1.700	3.900	2.200	2.850	2.400	3.700
1998	2.500	4.300	1.800	2.550	1.800	3.700
1999	1.700	3.800	2.100	3.500	3.000	3.725
2000	1.700	2.900	1.200	1.650	1.500	2.500
2001	1.700	2.800	1.100	2.100	1.400	2.350
2002	1.100	2.300	1.200	1.400	1.200	1.950
2003	2.100	4.600	2.500	3.250	2.700	4.100
Year	**Skewness**	**Kurtosis**	**K-S Dist.**	**K-S Prob.**	**Sum**	**Sum of Squares**
1993	0.0806	-1.901	0.171	0.703	17.200	60.700
1994	0.517	-2.021	0.250	0.273	16.400	46.900
1995	-1.723	3.408	0.304	0.087	15.100	50.650
1996	0.489	0.856	0.196	0.563	9.900	18.870
1997	0.287	-2.282	0.249	0.275	17.900	55.990
1998	0.394	-2.154	0.289	0.121	16.700	52.510
1999	-1.822	3.476	0.312	0.117	16.400	55.680
2000	0.829	-0.881	0.287	0.129	11.400	23.800
2001	-0.0295	-0.749	0.196	0.615	9.700	20.550
2002	1.316	1.031	0.265	0.365	6.300	10.730
2003	0.755	-0.509	0.207	0.611	13.600	48.780

Total Phosphorus

Figure 66 presents the seasonal mean total phosphorus trend in Indian Lake, while Table 51 presents descriptive statistics for total phosphorus in Indian Lake. The total phosphorus in Indian Lake exhibited a decreasing trend from 1995 to 2002. The total phosphorus in Indian Lake was generally slightly lower than the county average, though this difference was not statistically significant.

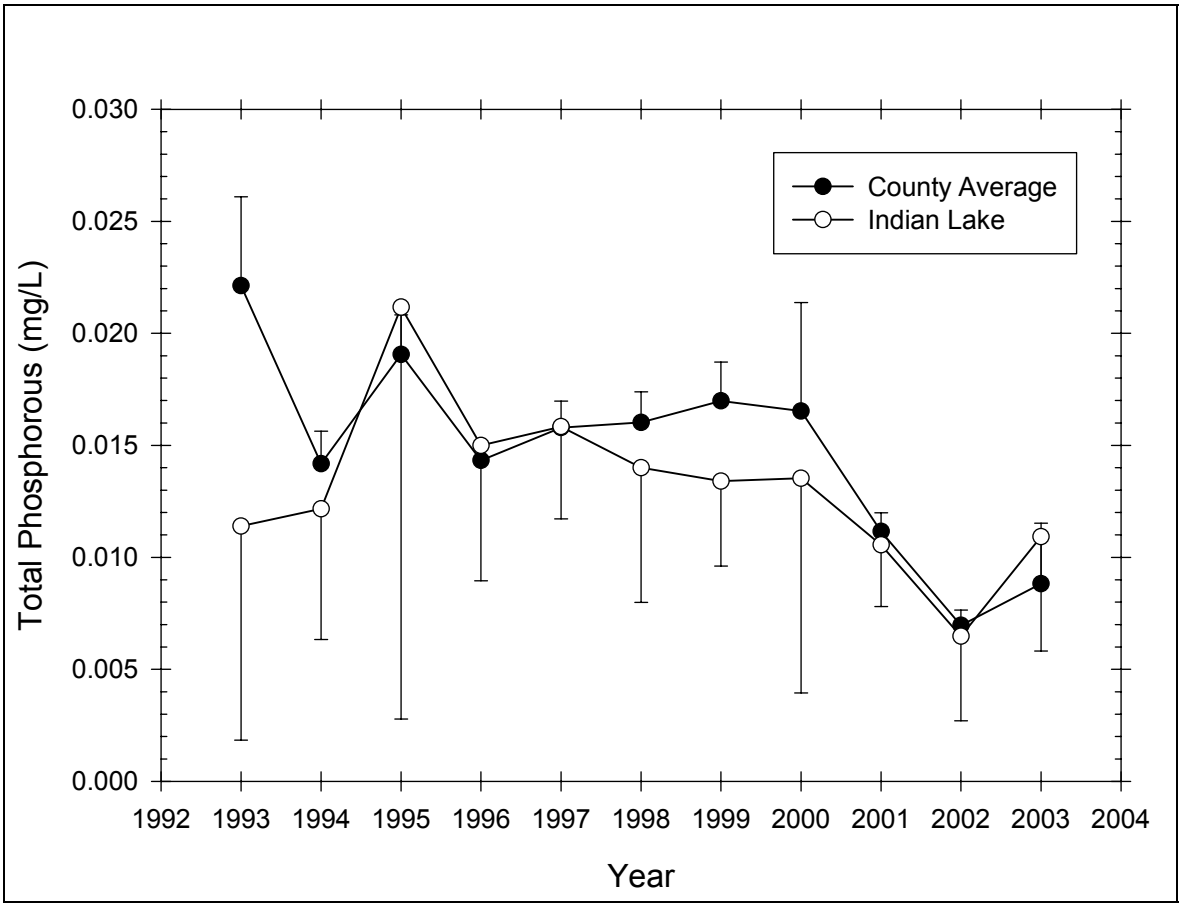


Figure 66 Seasonal mean total phosphorus trend in Indian Lake

Table 51 – Descriptive Statistics for Total Phosphorus in Indian Lake

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1993	6	1	0.0114	0.00770	0.00344	0.00956
1994	6	0	0.0122	0.00556	0.00227	0.00584
1995	6	0	0.0212	0.0175	0.00715	0.0184
1996	6	0	0.0150	0.00576	0.00235	0.00605
1997	6	0	0.0158	0.00392	0.00160	0.00411
1998	6	0	0.0140	0.00573	0.00234	0.00601
1999	6	1	0.0134	0.00305	0.00136	0.00379
2000	6	0	0.0135	0.00914	0.00373	0.00959
2001	6	1	0.0106	0.00222	0.000993	0.00276
2002	6	2	0.00647	0.00237	0.00118	0.00377
2003	6	2	0.0109	0.00321	0.00161	0.00511
Year	**Range**	**Max**	**Min**	**Median**	**25%**	**75%**
1993	0.0190	0.0220	0.00300	0.0120	0.00450	0.0168
1994	0.0160	0.0190	0.00300	0.0125	0.01000	0.0160
1995	0.0460	0.0550	0.00900	0.0140	0.01000	0.0250
1996	0.0170	0.0260	0.00900	0.0135	0.0130	0.0150
1997	0.00900	0.0210	0.0120	0.0150	0.0120	0.0200
1998	0.0150	0.0250	0.01000	0.0120	0.01000	0.0150
1999	0.00700	0.0170	0.01000	0.0130	0.0108	0.0163
2000	0.0230	0.0260	0.00300	0.0145	0.00320	0.0200

2001	0.00550	0.0140	0.00850	0.0106	0.00865	0.0118
2002	0.00530	0.00980	0.00450	0.00580	0.00480	0.00815
2003	0.00690	0.0134	0.00650	0.0119	0.00855	0.0133
Year	**Skewness**	**Kurtosis**	**K-S Dist.**	**K-S Prob.**	**Sum**	**Sum of Squares**
1993	0.350	-1.086	0.197	0.610	0.0570	0.000887
1994	-0.697	0.679	0.182	0.636	0.0730	0.00104
1995	1.944	3.803	0.325	0.046	0.127	0.00422
1996	1.722	3.892	0.333	0.036	0.0900	0.00152
1997	0.455	-1.930	0.189	0.599	0.0950	0.00158
1998	1.878	3.663	0.264	0.209	0.0840	0.00134
1999	0.162	-2.501	0.203	0.583	0.0670	0.000935
2000	-0.0239	-1.264	0.204	0.518	0.0812	0.00152
2001	0.974	0.735	0.221	0.493	0.0528	0.000577
2002	1.325	1.405	0.246	0.451	0.0259	0.000185
2003	-1.200	0.488	0.260	0.386	0.0437	0.000508

Nitrate

Figure 67 presents the seasonal mean nitrate trend in Indian Lake, while Table 52 presents descriptive statistics for nitrate in Indian Lake. The nitrate in Indian Lake exhibited a slight decreasing trend over the study period. The nitrate in Indian Lake was slightly higher than the county average, though this difference was not statistically significant.

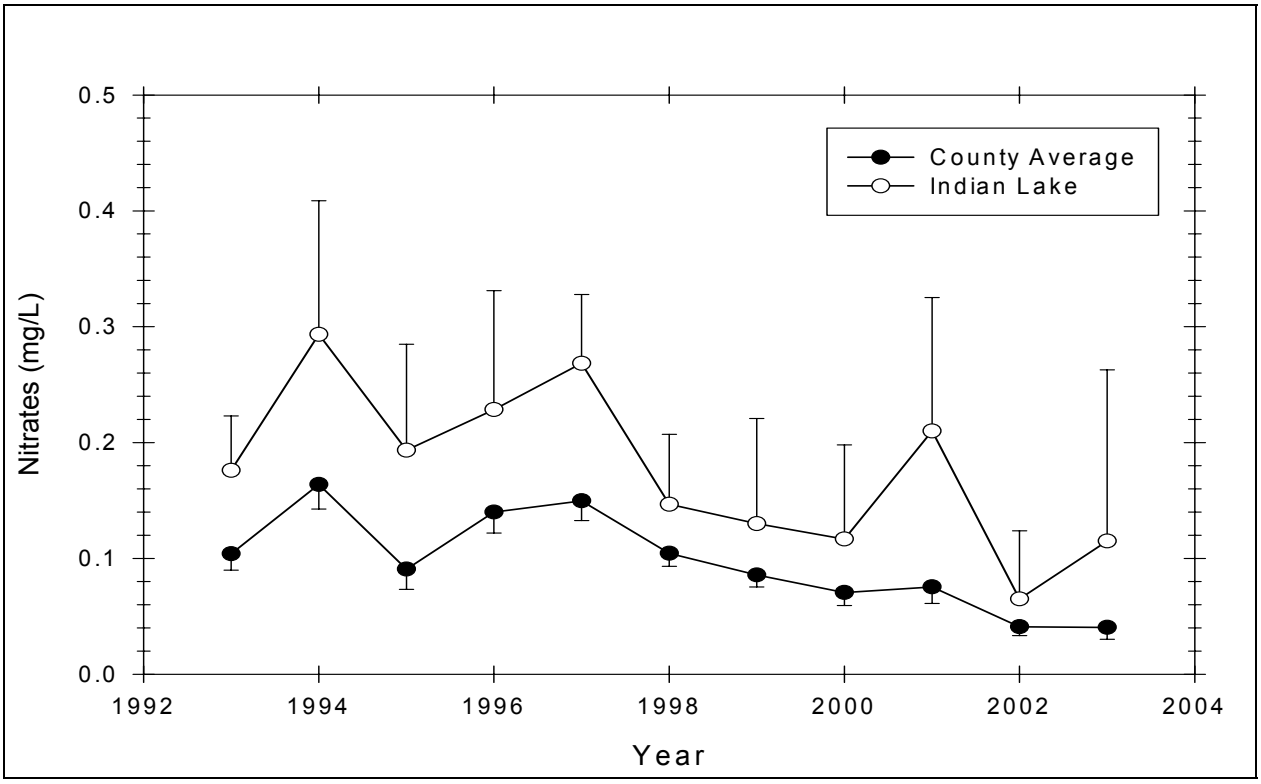


Figure 67 Seasonal mean nitrate trend in Indian Lake

Table 52 – Descriptive Statistics for Nitrate in Indian Lake

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1993	6	1	0.176	0.0378	0.0169	0.0470
1994	6	0	0.293	0.110	0.0448	0.115
1995	6	0	0.193	0.0871	0.0356	0.0914
1996	6	0	0.228	0.0979	0.0400	0.103
1997	6	0	0.268	0.0567	0.0232	0.0595
1998	6	0	0.147	0.0575	0.0235	0.0603
1999	6	1	0.130	0.0731	0.0327	0.0908
2000	6	0	0.117	0.0774	0.0316	0.0812
2001	6	1	0.210	0.0927	0.0415	0.115
2002	6	2	0.0650	0.0370	0.0185	0.0588
2003	6	2	0.115	0.0929	0.0465	0.148
Year	**Range**	**Max**	**Min**	**Median**	**25%**	**75%**
1993	0.0900	0.240	0.150	0.160	0.150	0.195
1994	0.270	0.430	0.160	0.290	0.190	0.400
1995	0.210	0.320	0.110	0.165	0.120	0.280
1996	0.260	0.390	0.130	0.215	0.140	0.280
1997	0.140	0.340	0.200	0.270	0.210	0.320
1998	0.140	0.230	0.0900	0.130	0.1000	0.200
1999	0.190	0.230	0.0400	0.150	0.0700	0.170
2000	0.210	0.260	0.0500	0.105	0.0500	0.130
2001	0.220	0.340	0.120	0.180	0.135	0.288
2002	0.0800	0.120	0.0400	0.0500	0.0450	0.0850
2003	0.200	0.230	0.0300	0.1000	0.0400	0.190
Year	**Skewness**	**Kurtosis**	**K-S Dist.**	**K-S Prob.**	**Sum**	**Sum of Squares**
1993	1.718	2.854	0.264	0.285	0.880	0.161
1994	0.0621	-1.875	0.168	0.698	1.760	0.577
1995	0.738	-1.452	0.227	0.387	1.160	0.262
1996	0.854	0.213	0.157	0.732	1.370	0.361
1997	-0.0174	-1.723	0.181	0.638	1.610	0.448
1998	0.627	-1.565	0.238	0.330	0.880	0.146
1999	0.172	-0.481	0.208	0.561	0.650	0.106
2000	1.522	2.767	0.265	0.205	0.700	0.112
2001	0.686	-1.426	0.227	0.466	1.050	0.255
2002	1.900	3.709	0.408	0.020	0.260	0.0210
2003	0.561	-2.478	0.258	0.397	0.460	0.0788

Chlorophyll a

Figure 68 presents the seasonal mean chlorophyll *a* trend in Indian Lake, while Table 53 presents descriptive statistics for chlorophyll *a* in Indian Lake. The chlorophyll *a* in Indian Lake exhibited a slight decreasing trend from 2001 to 2003. The chlorophyll *a* in Indian Lake was similar to the county average.

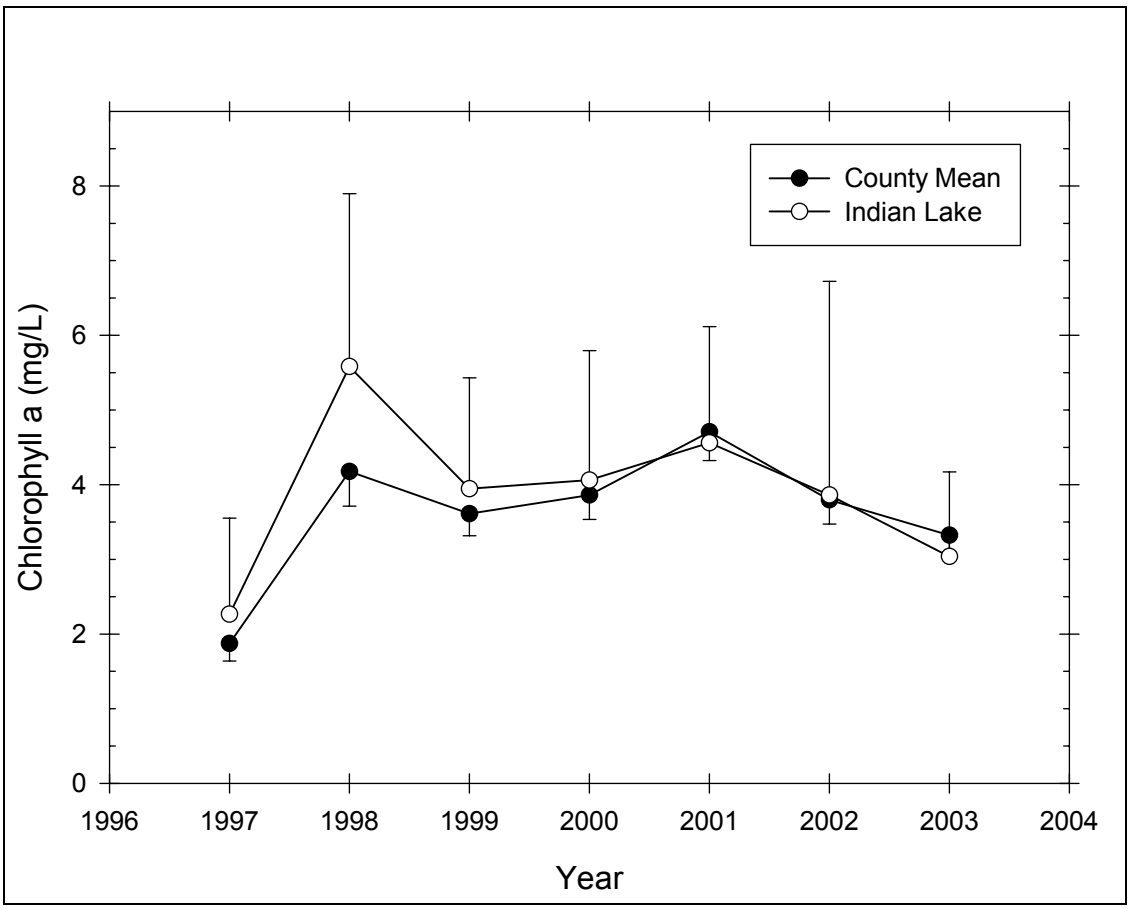


Figure 68 Seasonal mean chlorophyll a trend in Indian Lake

Table 53 – Descriptive Statistics for Chlorophyll a in Indian Lake

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1997	6	0	2.263	1.229	0.502	1.290
1998	6	0	5.582	2.207	0.901	2.316
1999	6	1	3.946	1.196	0.535	1.486
2000	6	0	4.062	1.652	0.675	1.734
2001	6	1	4.560	1.253	0.560	1.556
2002	6	2	3.860	1.800	0.900	2.864
2003	6	2	3.038	0.714	0.357	1.136
Year	**Range**	**Max**	**Min**	**Median**	**25%**	**75%**
1997	3.110	3.830	0.720	1.945	1.510	3.630
1998	6.330	8.360	2.030	6.160	4.110	6.670
1999	2.620	5.300	2.680	4.150	2.732	4.962
2000	3.780	5.650	1.870	4.660	2.120	5.410
2001	3.220	6.130	2.910	4.720	3.570	5.470
2002	3.980	6.520	2.540	3.190	2.845	4.875
2003	1.720	3.910	2.190	3.025	2.530	3.545
Year	**Skewness**	**Kurtosis**	**K-S Dist.**	**K-S Prob.**	**Sum**	**Sum of Squares**
1997	0.349	-1.468	0.207	0.505	13.580	38.286
1998	-0.694	0.390	0.268	0.192	33.490	211.283
1999	-0.124	-2.725	0.241	0.393	19.730	83.580

2000	-0.727	-1.812	0.285	0.133	24.370	112.633
2001	-0.158	-0.871	0.151	0.742	22.800	110.250
2002	1.819	3.495	0.387	0.036	15.440	69.317
2003	0.0984	0.593	0.171	0.699	12.150	38.434

Transparency

Figure 69 presents the seasonal mean transparency trend in Indian Lake, while Table 54 presents descriptive statistics for transparency in Indian Lake. The transparency in Indian Lake was variable year to year and did not exhibit any strong trend during the study period. The appeared to be a decrease in transparency from 1995 – 2000, followed by an increase from 2000 to 2003.

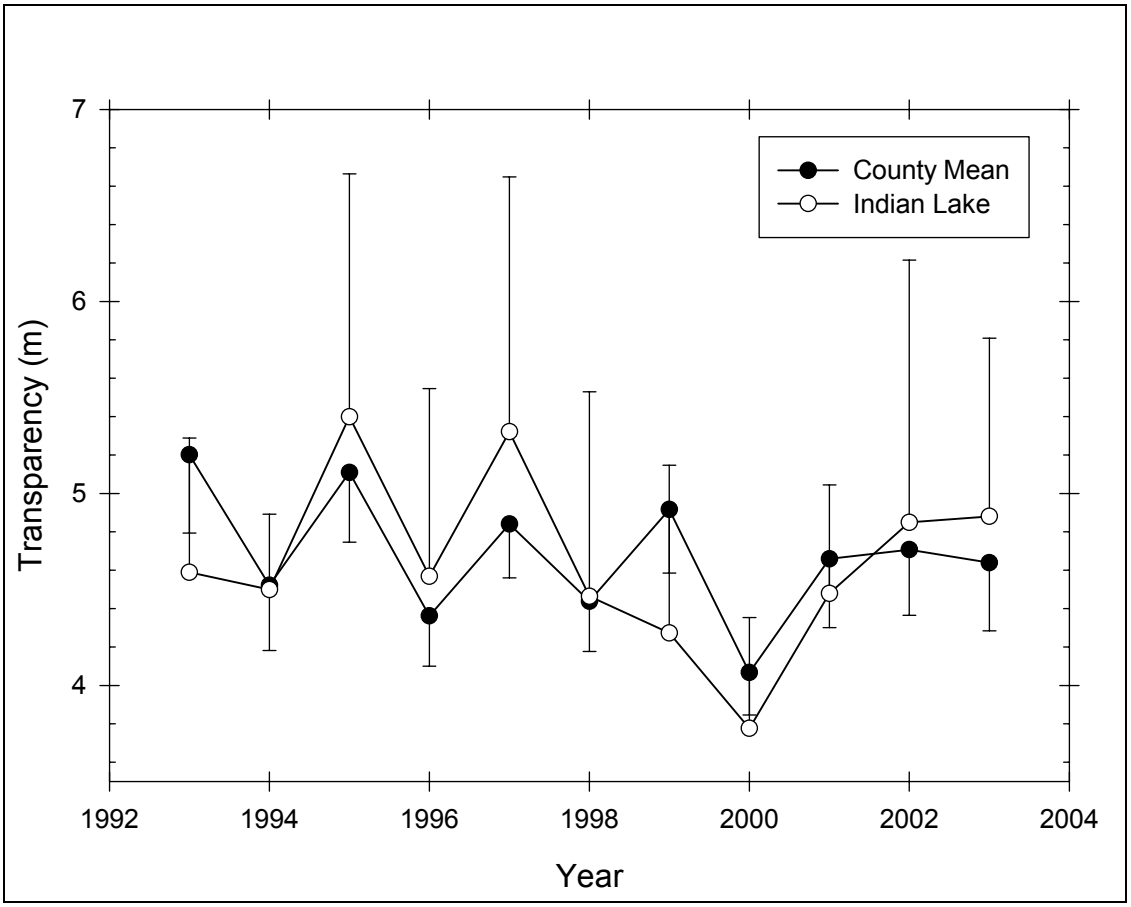


Figure 69 Seasonal mean transparency trend in Indian Lake

Table 54 – Descriptive Statistics for Transparency in Indian Lake

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1993	6	2	4.590	0.439	0.220	0.699
1994	6	0	4.500	0.374	0.153	0.393
1995	6	0	5.400	1.205	0.492	1.264
1996	6	0	4.568	0.932	0.380	0.978
1997	6	0	5.322	1.264	0.516	1.327
1998	6	0	4.465	1.014	0.414	1.064

1999	5	0	4.274	0.703	0.315	0.873
2000	6	0	3.777	0.550	0.225	0.577
2001	5	0	4.480	0.455	0.203	0.565
2002	4	0	4.850	0.858	0.429	1.366
2003	4	0	4.880	0.583	0.292	0.928
Year	**Range**	**Max**	**Min**	**Median**	**25%**	**75%**
1993	0.910	5.150	4.240	4.485	4.240	4.940
1994	1.100	5.000	3.900	4.550	4.300	4.700
1995	3.450	7.300	3.850	5.275	4.700	6.000
1996	2.400	5.750	3.350	4.750	3.600	5.210
1997	3.310	7.410	4.100	5.060	4.200	6.100
1998	2.600	5.800	3.200	4.290	3.760	5.450
1999	1.850	5.080	3.230	4.400	3.808	4.765
2000	1.500	4.800	3.300	3.600	3.400	3.960
2001	1.000	5.000	4.000	4.700	4.000	4.775
2002	1.900	5.500	3.600	5.150	4.300	5.400
2003	1.330	5.730	4.400	4.695	4.545	5.215
Year	**Skewness**	**Kurtosis**	**K-S Dist.**	**K-S Prob.**	**Sum**	**Sum of Squares**
1993	0.730	-1.947	0.287	0.273	18.360	84.851
1994	-0.515	0.729	0.167	0.701	27.000	122.200
1995	0.492	0.158	0.176	0.663	32.400	182.215
1996	-0.284	-1.408	0.184	0.626	27.410	129.559
1997	0.921	0.130	0.167	0.699	31.930	177.911
1998	0.238	-1.619	0.194	0.573	26.790	124.760
1999	-0.689	0.361	0.171	0.704	21.370	93.315
2000	1.632	2.714	0.293	0.112	22.660	87.092
2001	-0.262	-2.633	0.286	0.197	22.400	101.180
2002	-1.670	2.847	0.319	0.164	19.400	96.300
2003	1.647	3.105	0.371	0.057	19.520	96.279

TSI

Figure 70 presents the Carlson trophic state index trend in Indian Lake. Chlorophyll *a* TSI was generally in the eutrophic range, while transparency and total phosphorus TSI was near the oligotrophic-mesotrophic boundary.

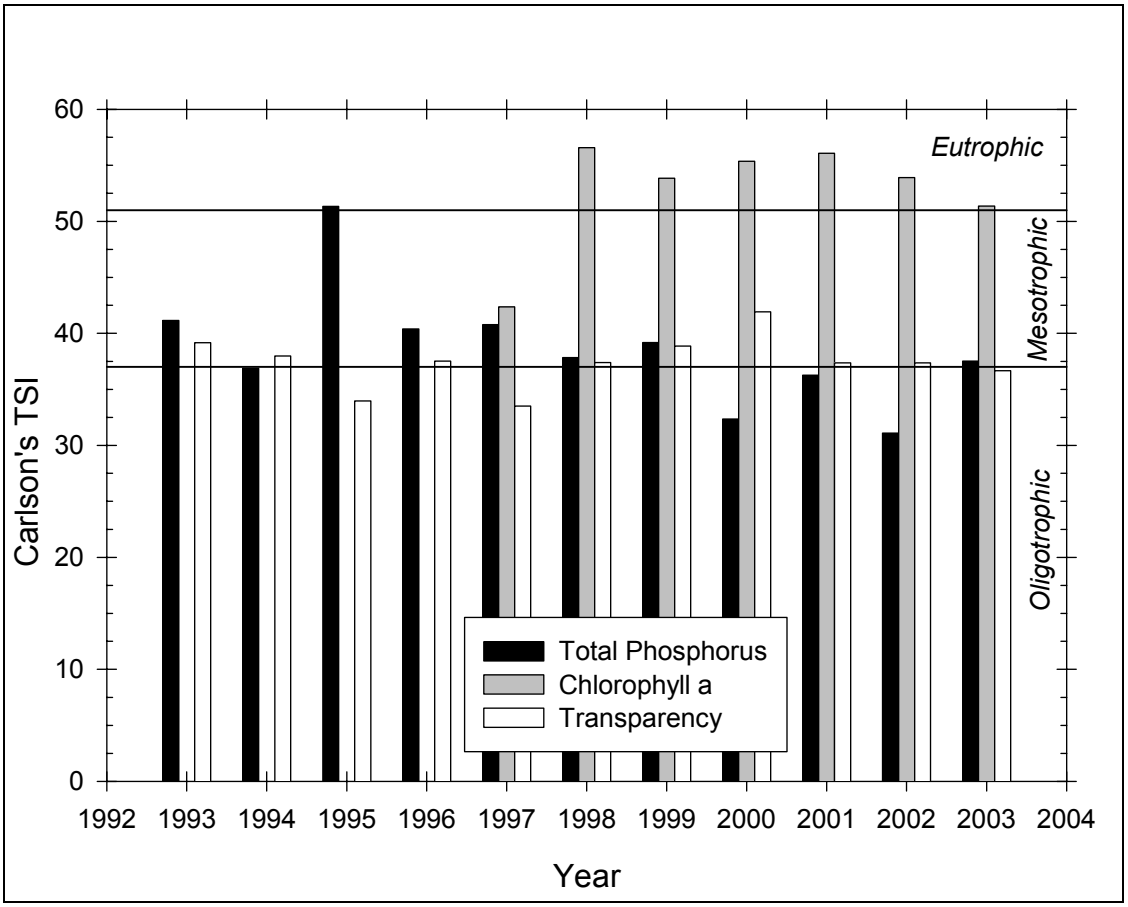


Figure 70 Carlson TSI trend in Indian Lake

Aluminum

Figure 71 presents the seasonal mean aluminum trend in Indian Lake, while Table 55 presents descriptive statistics for aluminum in Indian Lake. The aluminum in Indian Lake exhibited a steady trend throughout the study period. The aluminum in Indian Lake was similar to or slightly lower than the county average, though this difference was not statistically significant.

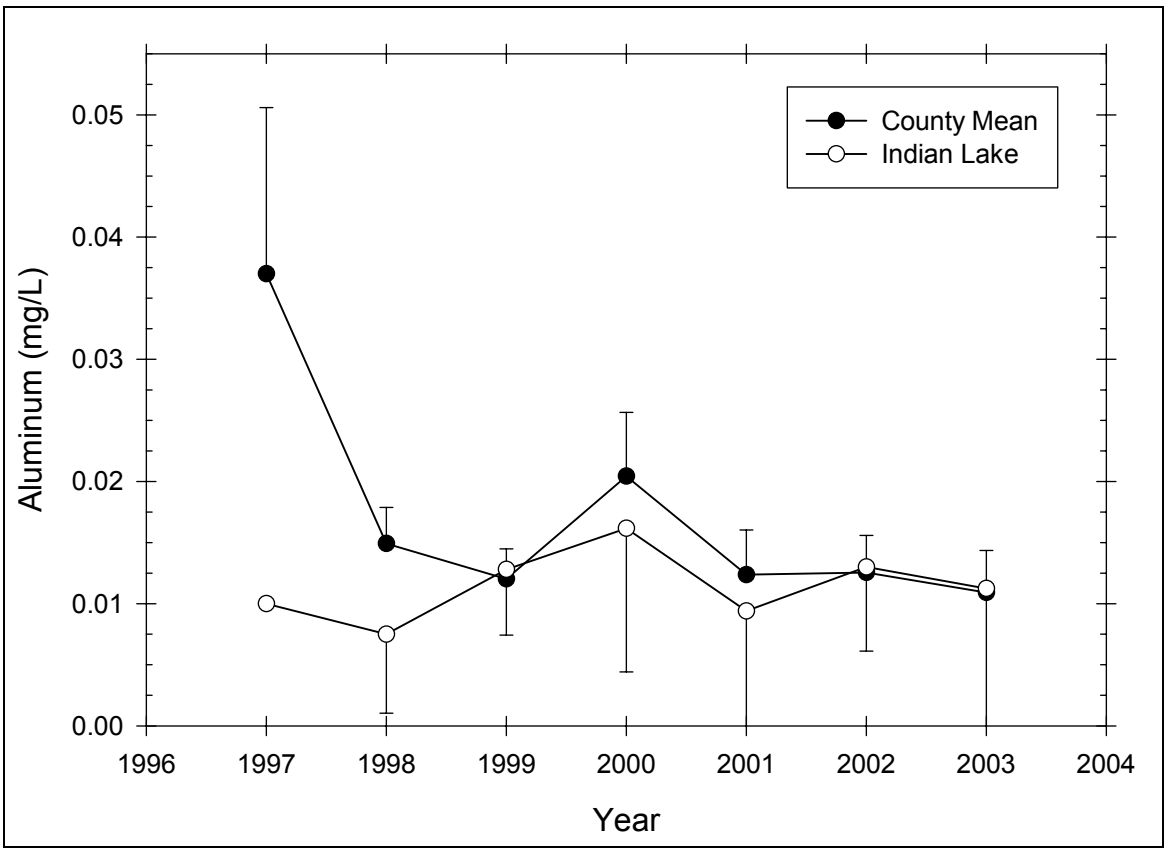


Figure 71 Seasonal mean aluminum trend in Indian Lake

Table 55 – Descriptive Statistics for Aluminum in Indian Lake

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1997	6	5	0.01000	--	--	--
1998	6	0	0.00750	0.00616	0.00251	0.00646
1999	6	1	0.0128	0.00432	0.00193	0.00537
2000	6	0	0.0162	0.0112	0.00457	0.0118
2001	6	1	0.00940	0.00929	0.00415	0.0115
2002	6	2	0.0130	0.00432	0.00216	0.00687
2003	6	2	0.0113	0.00780	0.00390	0.0124
Year	**Range**	**Max**	**Min**	**Median**	**25%**	**75%**
1997	0.000	0.01000	0.01000	0.01000	0.01000	0.01000
1998	0.0180	0.0190	0.001000	0.00650	0.00400	0.00800
1999	0.01000	0.0180	0.00800	0.0130	0.00875	0.0165
2000	0.0310	0.0360	0.00500	0.0145	0.00700	0.0200
2001	0.0240	0.0250	0.001000	0.00600	0.00400	0.0138
2002	0.01000	0.0170	0.00700	0.0140	0.01000	0.0160
2003	0.0170	0.0210	0.00400	0.01000	0.00500	0.0175
Year	**Skewness**	**Kurtosis**	**K-S Dist.**	**K-S Prob.**	**Sum**	**Sum of Squares**
1997	--	--	--	--	0.01000	0.0001000
1998	1.543	3.219	0.301	0.095	0.0450	0.000527
1999	0.0408	-2.369	0.210	0.549	0.0640	0.000894
2000	1.210	1.663	0.199	0.545	0.0970	0.00219
2001	1.600	2.861	0.274	0.241	0.0470	0.000787

2002	-1.190	1.500	0.250	0.432	0.0520	0.000732
2003	0.592	-2.167	0.249	0.435	0.0450	0.000689

Calcium

Figure 72 presents the seasonal mean calcium trend in Indian Lake, while Table 56 presents descriptive statistics for calcium in Indian Lake. The calcium in Indian Lake exhibited a flat trend throughout the study period. The calcium in Indian Lake was significantly lower than the county average.

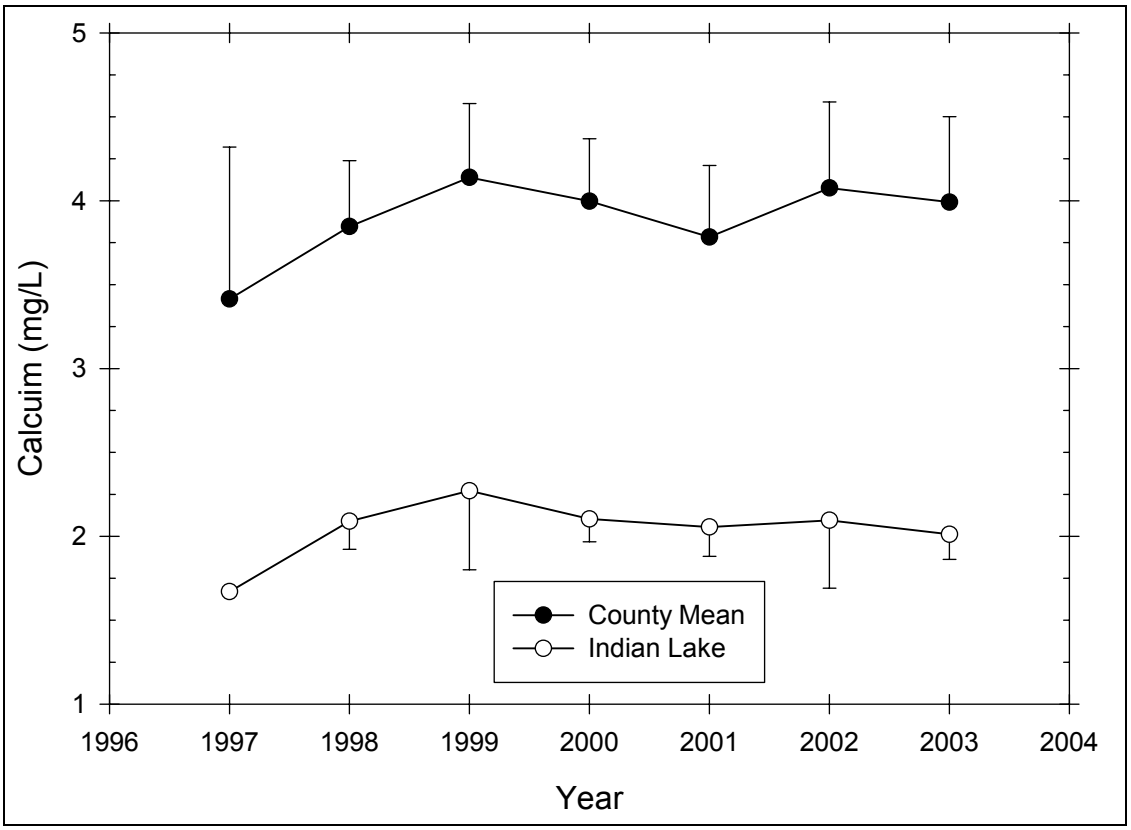


Figure 72 Seasonal mean calcium trend in Indian Lake

Table 56 – Descriptive Statistics for Calcium in Indian Lake

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1997	6	5	1.670	--	--	--
1998	6	0	2.090	0.160	0.0652	0.168
1999	6	1	2.272	0.379	0.170	0.471
2000	6	0	2.103	0.130	0.0529	0.136
2001	6	1	2.056	0.142	0.0633	0.176
2002	6	2	2.095	0.254	0.127	0.404
2003	6	2	2.012	0.0946	0.0473	0.151
Year	**Range**	**Max**	**Min**	**Median**	**25%**	**75%**
1997	0.000	1.670	1.670	1.670	1.670	1.670
1998	0.370	2.280	1.910	2.070	1.940	2.270
1999	0.900	2.690	1.790	2.440	1.918	2.532
2000	0.340	2.270	1.930	2.075	2.030	2.240

2001	0.350	2.240	1.890	2.090	1.928	2.150
2002	0.610	2.380	1.770	2.115	1.915	2.275
2003	0.210	2.090	1.880	2.040	1.945	2.080
Year	**Skewness**	**Kurtosis**	**K-S Dist.**	**K-S Prob.**	**Sum**	**Sum of Squares**
1997	--	--	--	--	1.670	2.789
1998	0.242	-2.021	0.204	0.522	12.540	26.336
1999	-0.424	-2.172	0.271	0.254	11.360	26.386
2000	0.206	-1.144	0.208	0.499	12.620	26.628
2001	0.0582	-1.442	0.195	0.619	10.280	21.216
2002	-0.439	0.722	0.195	0.647	8.380	17.750
2003	-1.314	1.255	0.239	0.479	8.050	16.227

Calcite Saturation Index

Figure 73 presents the calcite saturation index trend in Indian Lake,. The CSI in Indian Lake exhibited a slight decreasing trend over the study period, from very vulnerable to acid deposition in 1997 to low vulnerability to acid deposition by 2000. The calcium in Indian Lake was sometimes slightly higher and sometimes slightly lower than the county average, though this difference was not statistically significant.

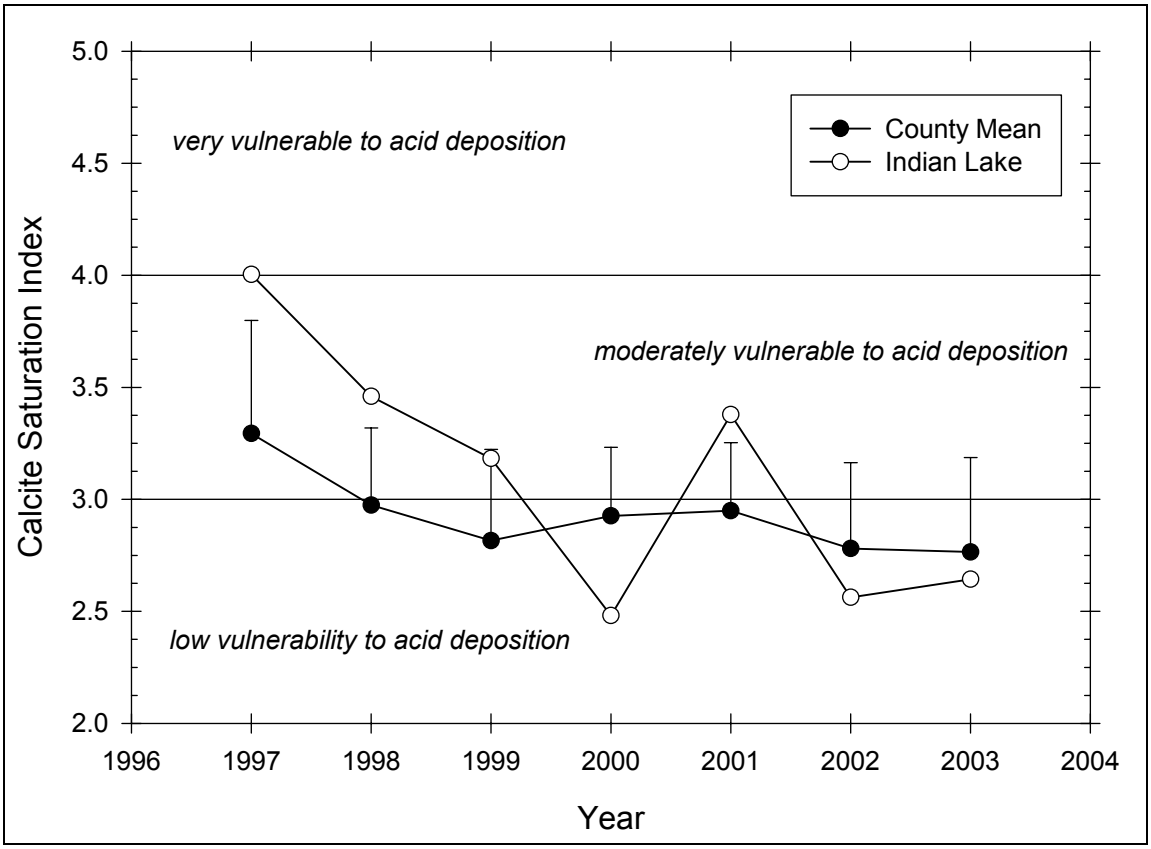


Figure 73 Seasonal mean CSI trend in Indian Lake