

Lake Pleasant

Location

Pond Number: 050313
Watershed: Upper Hudson River
County: Hamilton
Topographic Quadrangle: Lake Pleasant

Sample Site

Latitude: 43° 27.981'
Longitude: 74° 23.761'

Morphometry

Surface Area: 1,547 Ac.
Mean Depth: 29 Ft.
Maximum Depth: 69 Ft.
Volume: 44,863 Ac./Ft.
Watershed Area: 7,907 Ac.
Hydraulic Retention Time: 2.0 Yr.
Shoreline Length: 9.6 Mi.
Elevation: 1,725 Ft.
Water Quality Classification: AA



Temperature and Dissolved Oxygen

Lake Pleasant had a minimum DO of 0.1 mg/L (September 2003), with a minimum temperature of 5.0°C and a maximum temperature of 24.5°C. In general, the lowest DO values occurred during the months of August through October.

pH

Figure 114 presents the seasonal mean pH trend in Lake Pleasant, while Table 89 presents descriptive statistics for pH in Lake Pleasant. The pH in Lake Pleasant exhibited an increasing trend from 1997 to 1999, followed by a slight decrease from 1999 to 2003. The pH in Lake Pleasant was similar to the county average.

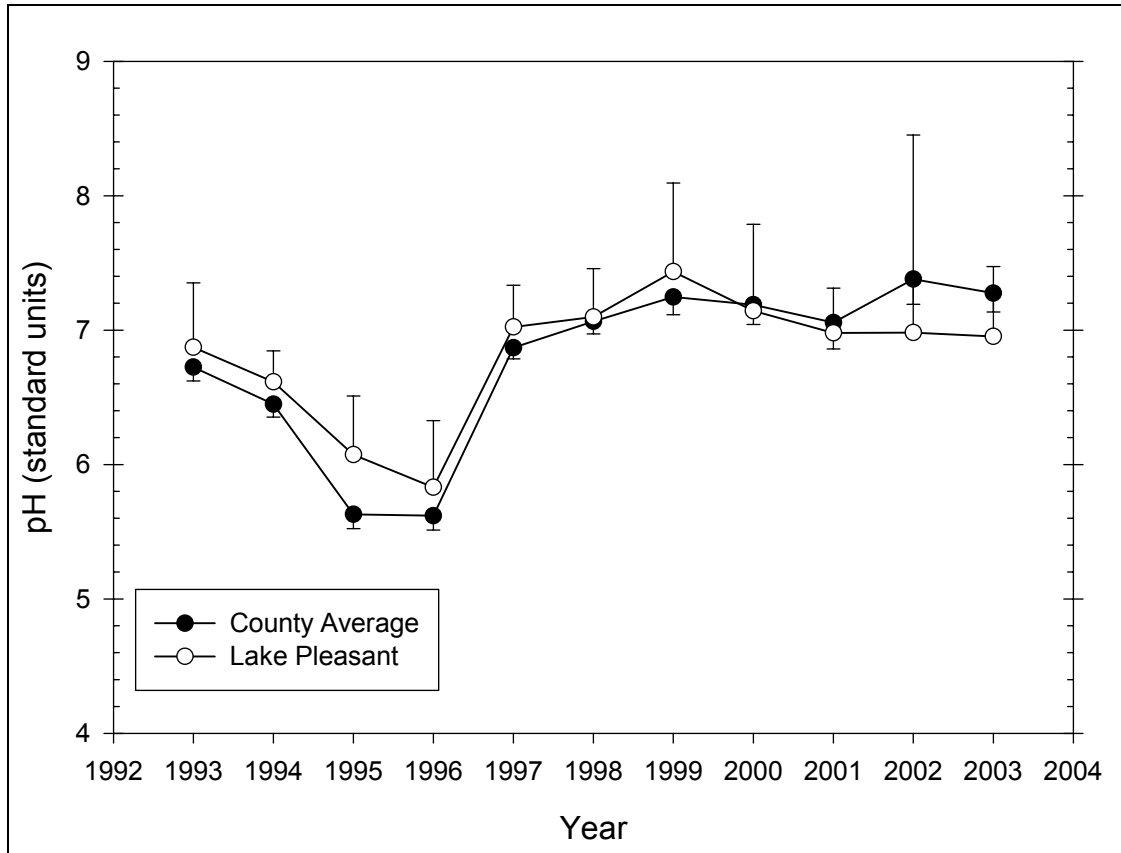


Figure 114 Seasonal mean pH trend in Lake Pleasant

Table 89 – Descriptive Statistics for pH in Lake Pleasant

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1993	6	1	6.872	0.387	0.173	0.480
1994	6	0	6.615	0.220	0.0899	0.231
1995	6	0	6.073	0.416	0.170	0.437
1996	6	0	5.830	0.472	0.193	0.496
1997	6	0	7.023	0.296	0.121	0.311
1998	6	0	7.098	0.343	0.140	0.360
1999	4	0	7.435	0.415	0.208	0.661
2000	6	0	7.143	0.614	0.251	0.644
2001	5	0	6.980	0.267	0.120	0.332
2002	4	0	6.982	0.924	0.462	1.471
2003	5	0	6.954	0.418	0.187	0.519
Year	Range	Max	Min	Median	25%	75%
1993	0.750	7.190	6.440	7.100	6.455	7.175
1994	0.540	6.860	6.320	6.650	6.390	6.820
1995	1.230	6.670	5.440	6.015	5.940	6.360
1996	1.270	6.590	5.320	5.760	5.480	6.070
1997	0.820	7.290	6.470	7.090	6.960	7.240
1998	0.960	7.650	6.690	7.075	6.830	7.270
1999	0.800	7.800	7.000	7.470	7.080	7.790
2000	1.600	8.290	6.690	6.930	6.700	7.320
2001	0.650	7.280	6.630	7.070	6.742	7.175

2002	2.100	7.870	5.770	7.145	6.280	7.685
2003	1.030	7.450	6.420	6.880	6.652	7.330
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1993	-0.577	-3.281	0.322	0.098	34.360	236.720
1994	-0.383	-1.629	0.212	0.475	39.690	262.792
1995	-0.0884	0.623	0.208	0.499	36.440	222.179
1996	0.734	-0.260	0.223	0.411	34.980	205.049
1997	-1.610	2.934	0.249	0.277	42.140	296.402
1998	0.629	0.157	0.142	0.764	42.590	302.906
1999	-0.125	-5.260	0.297	0.237	29.740	221.634
2000	1.666	2.762	0.230	0.373	42.860	308.047
2001	-0.415	-1.791	0.232	0.441	34.900	243.888
2002	-0.804	-0.459	0.212	0.591	27.930	197.584
2003	-0.0226	-1.581	0.189	0.643	34.770	242.490

Alkalinity

Figure 115 presents the seasonal mean alkalinity trend in Lake Pleasant, while Table 90 presents descriptive statistics for alkalinity in Lake Pleasant. The alkalinity in Lake Pleasant did not exhibit any consistent trend. The alkalinity in Lake Pleasant was slightly higher than the county average, though this difference was not statistically significant.

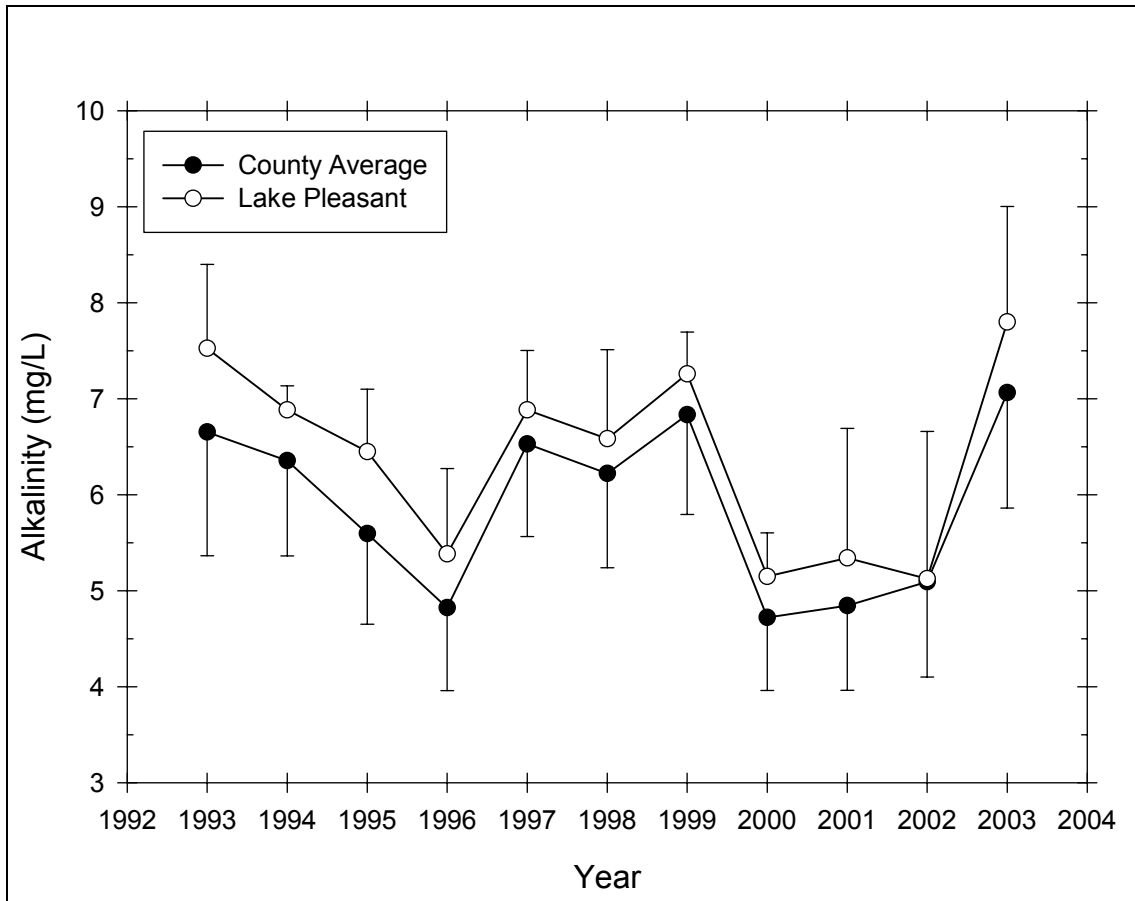


Figure 115 Seasonal mean alkalinity trend in Lake Pleasant

Table 90 – Descriptive Statistics for Alkalinity in Lake Pleasant

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1993	5	1	7.525	0.550	0.275	0.875
1994	6	0	6.883	0.240	0.0980	0.252
1995	6	0	6.450	0.619	0.253	0.649
1996	6	0	5.383	0.847	0.346	0.889
1997	6	0	6.883	0.591	0.241	0.621
1998	6	0	6.583	0.884	0.361	0.928
1999	6	1	7.260	0.351	0.157	0.435
2000	6	0	5.150	0.432	0.177	0.454
2001	6	1	5.340	1.088	0.486	1.351
2002	6	2	5.125	0.964	0.482	1.534
2003	6	1	7.800	0.970	0.434	1.204
Year	Range	Max	Min	Median	25%	75%
1993	1.200	8.000	6.800	7.650	7.100	7.950
1994	0.700	7.300	6.600	6.800	6.800	7.000
1995	1.600	7.200	5.600	6.400	6.000	7.100
1996	2.200	6.600	4.400	5.350	4.700	5.900
1997	1.400	7.400	6.000	7.150	6.300	7.300
1998	2.300	8.000	5.700	6.500	5.800	7.000
1999	0.900	7.600	6.700	7.300	7.075	7.525
2000	0.900	5.600	4.700	5.150	4.700	5.600
2001	2.800	6.500	3.700	5.400	4.675	6.200
2002	2.200	6.400	4.200	4.950	4.400	5.850
2003	2.400	9.100	6.700	7.700	7.000	8.575
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1993	-0.894	-0.852	0.252	0.422	30.100	227.410
1994	1.071	1.521	0.302	0.092	41.300	284.570
1995	-0.0114	-1.202	0.199	0.548	38.700	251.530
1996	0.310	-1.493	0.216	0.453	32.300	177.470
1997	-0.876	-1.347	0.259	0.228	41.300	286.030
1998	0.723	-0.398	0.208	0.499	39.500	263.950
1999	-1.185	1.505	0.232	0.440	36.300	264.030
2000	5.121E-015	-2.810	0.218	0.438	30.900	160.070
2001	-0.793	0.388	0.177	0.686	26.700	147.310
2002	0.850	-0.173	0.207	0.610	20.500	107.850
2003	0.337	-1.365	0.165	0.719	39.000	307.960

Total Phosphorus

Figure 116 presents the seasonal mean total phosphorus trend in Lake Pleasant, while Table 91 presents descriptive statistics for total phosphorus in Lake Pleasant. The total phosphorus in Lake Pleasant exhibited a decreasing trend from 1993 to 2003. The total phosphorus in Lake Pleasant was similar to the county average.

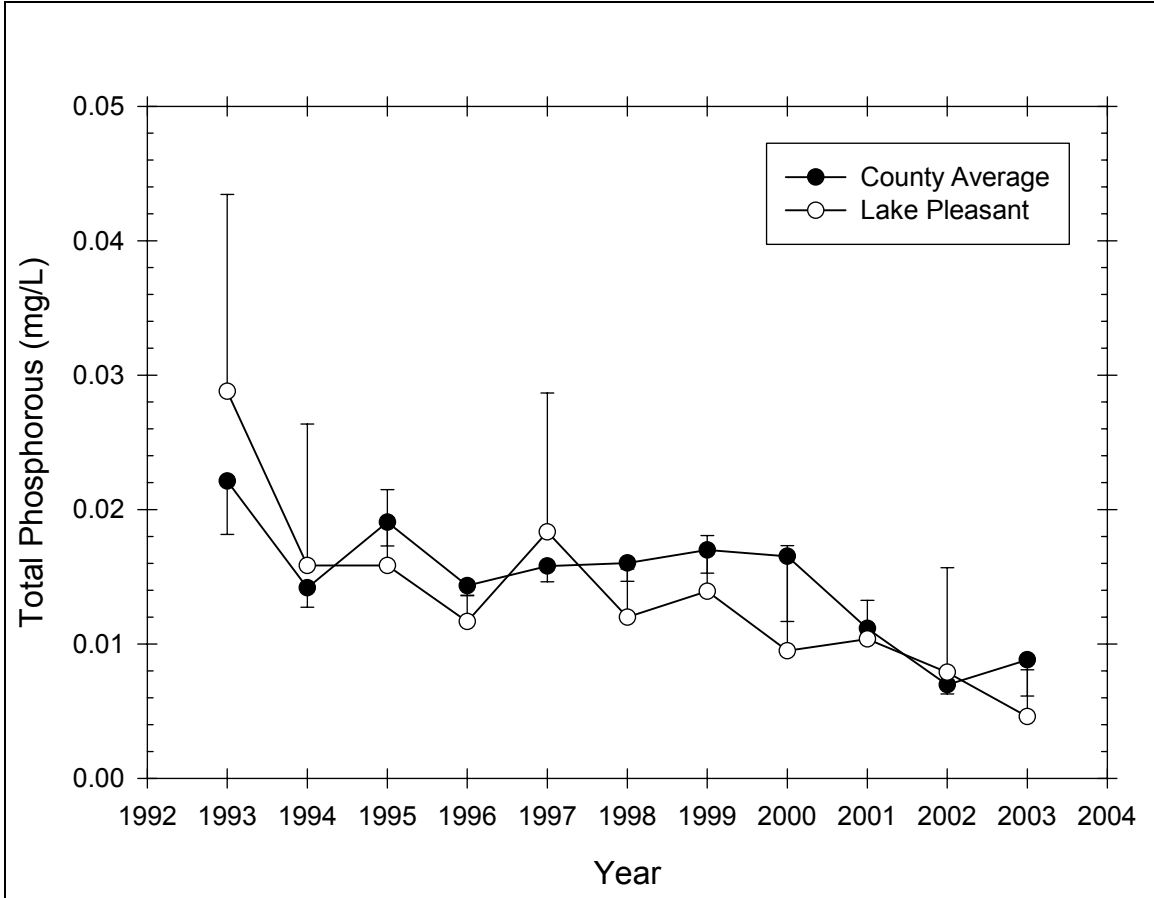


Figure 116 Seasonal mean total phosphorus trend in Lake Pleasant

Table 91 – Descriptive Statistics for Total Phosphorus in Lake Pleasant

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1993	6	1	0.0288	0.0118	0.00528	0.0146
1994	6	0	0.0158	0.0100	0.00409	0.0105
1995	6	0	0.0158	0.00538	0.00220	0.00565
1996	6	0	0.0117	0.00186	0.000760	0.00195
1997	6	0	0.0183	0.00985	0.00402	0.0103
1998	6	0	0.0120	0.00341	0.00139	0.00357
1999	6	1	0.0139	0.00334	0.00149	0.00414
2000	6	0	0.00950	0.00745	0.00304	0.00782
2001	6	1	0.0104	0.00233	0.00104	0.00290
2002	6	2	0.00790	0.00489	0.00245	0.00779
2003	6	1	0.00460	0.00281	0.00125	0.00348
Year	Range	Max	Min	Median	25%	75%
1993	0.0270	0.0450	0.0180	0.0250	0.0187	0.0390
1994	0.0260	0.0360	0.01000	0.0115	0.0110	0.0150
1995	0.0120	0.0200	0.00800	0.0185	0.01000	0.0200
1996	0.00500	0.0140	0.00900	0.0120	0.01000	0.0130
1997	0.0250	0.0360	0.0110	0.0135	0.0120	0.0240
1998	0.00900	0.0180	0.00900	0.0105	0.01000	0.0140
1999	0.00800	0.0170	0.00900	0.0156	0.0113	0.0163
2000	0.0170	0.0200	0.00300	0.00850	0.00300	0.0140

2001	0.00610	0.0140	0.00790	0.00990	0.00873	0.0118
2002	0.0112	0.0149	0.00370	0.00650	0.00470	0.0111
2003	0.00690	0.00810	0.00120	0.00480	0.00217	0.00683
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1993	0.646	-1.779	0.226	0.469	0.144	0.00470
1994	2.297	5.369	0.366	0.012	0.0950	0.00201
1995	-0.948	-1.538	0.323	0.050	0.0950	0.00165
1996	-0.392	-0.943	0.238	0.332	0.0700	0.000834
1997	1.510	1.485	0.337	0.032	0.110	0.00250
1998	1.367	1.168	0.282	0.143	0.0720	0.000922
1999	-0.934	-0.776	0.293	0.172	0.0696	0.00101
2000	0.374	-2.084	0.309	0.077	0.0570	0.000819
2001	1.017	1.105	0.192	0.632	0.0518	0.000558
2002	1.468	2.402	0.299	0.230	0.0316	0.000321
2003	0.00283	-1.678	0.173	0.699	0.0230	0.000137

Nitrate

Figure 117 presents the seasonal mean nitrate trend in Lake Pleasant, while Table 92 presents descriptive statistics for nitrate in Lake Pleasant. The nitrate in Lake Pleasant exhibited a decreasing trend from 1997 to 2003. The nitrate in Lake Pleasant was slightly lower than the county average, though this difference was not statistically significant.

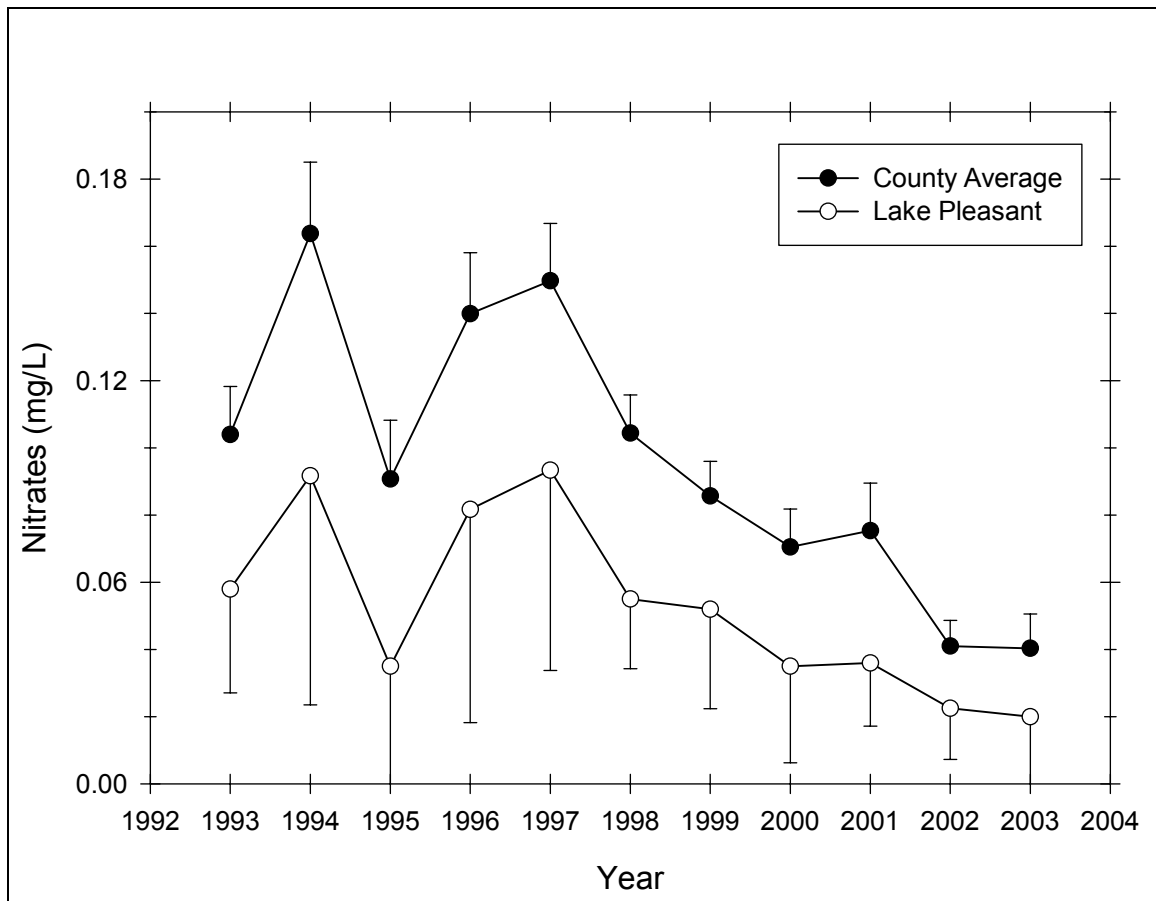


Figure 117 Seasonal mean nitrate trend in Lake Pleasant

Table 92 – Descriptive Statistics for Nitrate in Lake Pleasant

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1993	6	1	0.0580	0.0249	0.0111	0.0309
1994	6	0	0.0917	0.0649	0.0265	0.0681
1995	6	0	0.0350	0.0468	0.0191	0.0491
1996	6	0	0.0817	0.0605	0.0247	0.0635
1997	6	0	0.0933	0.0568	0.0232	0.0596
1998	6	0	0.0550	0.0197	0.00806	0.0207
1999	6	1	0.0520	0.0239	0.0107	0.0296
2000	6	0	0.0350	0.0274	0.0112	0.0287
2001	6	1	0.0360	0.0152	0.00678	0.0188
2002	6	2	0.0225	0.00957	0.00479	0.0152
2003	6	1	0.0200	0.0173	0.00775	0.0215
Year	Range	Max	Min	Median	25%	75%
1993	0.0600	0.1000	0.0400	0.0500	0.0400	0.0700
1994	0.140	0.180	0.0400	0.0550	0.0500	0.170
1995	0.1000	0.1000	0.000	0.01000	0.000	0.0900
1996	0.150	0.180	0.0300	0.0650	0.0300	0.120
1997	0.130	0.160	0.0300	0.0850	0.0500	0.150
1998	0.0600	0.0900	0.0300	0.0500	0.0500	0.0600
1999	0.0600	0.0900	0.0300	0.0400	0.0375	0.0675
2000	0.0700	0.0900	0.0200	0.0250	0.0200	0.0300
2001	0.0400	0.0600	0.0200	0.0300	0.0275	0.0450
2002	0.0200	0.0300	0.01000	0.0250	0.0150	0.0300
2003	0.0400	0.0500	0.01000	0.01000	0.01000	0.0275
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1993	1.671	2.815	0.268	0.267	0.290	0.0193
1994	0.937	-1.813	0.354	0.018	0.550	0.0715
1995	0.948	-1.757	0.370	0.010	0.210	0.0183
1996	0.895	-0.338	0.255	0.250	0.490	0.0583
1997	0.132	-2.639	0.277	0.159	0.560	0.0684
1998	1.052	2.465	0.267	0.198	0.330	0.0201
1999	1.264	1.099	0.292	0.174	0.260	0.0158
2000	2.279	5.328	0.406	0.003	0.210	0.0111
2001	1.118	1.456	0.254	0.332	0.180	0.00740
2002	-0.855	-1.289	0.283	0.289	0.0900	0.00230
2003	1.925	3.667	0.318	0.101	0.1000	0.00320

Chlorophyll a

Figure 118 presents the seasonal mean chlorophyll *a* trend in Lake Pleasant, while Table 93 presents descriptive statistics for chlorophyll *a* in Lake Pleasant. The chlorophyll *a* in Lake Pleasant did not exhibit any consistent trend, although concentrations generally increased from 1997 to 2001 and decreased from 2001 to 2003. The chlorophyll *a* in Lake Pleasant was generally slightly higher than the county average, though this difference was not statistically significant.

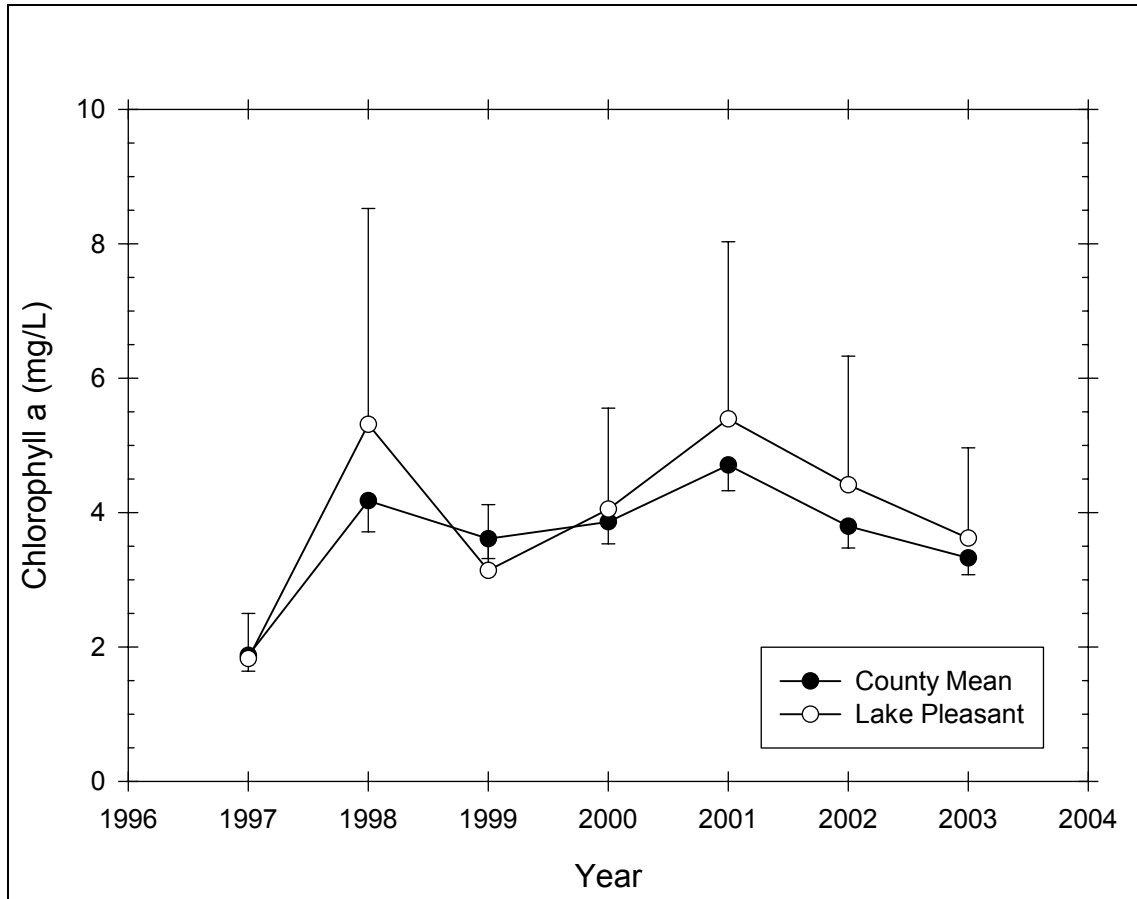


Figure 118 Seasonal mean chlorophyll a trend in Lake Pleasant

Table 93 – Descriptive Statistics for Chlorophyll a in Lake Pleasant

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1997	6	0	1.827	0.639	0.261	0.671
1998	6	0	5.313	3.058	1.249	3.210
1999	6	1	3.138	0.790	0.353	0.981
2000	6	0	4.050	1.433	0.585	1.504
2001	6	1	5.392	2.124	0.950	2.637
2002	6	2	4.412	1.203	0.602	1.915
2003	6	2	3.618	0.846	0.423	1.346
Year	Range	Max	Min	Median	25%	75%
1997	1.780	2.840	1.060	1.815	1.270	2.160
1998	7.280	8.370	1.090	6.505	1.970	7.440
1999	1.990	4.470	2.480	2.880	2.623	3.510
2000	3.560	6.270	2.710	3.835	2.760	4.890
2001	5.230	8.660	3.430	5.420	3.543	6.567
2002	2.620	5.330	2.710	4.805	3.565	5.260
2003	1.800	4.880	3.080	3.255	3.155	4.080
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1997	0.522	0.0805	0.141	0.765	10.960	22.062
1998	-0.707	-1.735	0.235	0.349	31.880	216.161
1999	1.656	2.880	0.274	0.243	15.690	51.731

2000	0.639	-0.992	0.246	0.289	24.300	108.682
2001	0.936	0.584	0.211	0.546	26.960	163.410
2002	-1.412	1.558	0.252	0.421	17.650	82.225
2003	1.939	3.811	0.405	0.021	14.470	54.492

Transparency

Figure 119 presents the seasonal mean transparency trend in Lake Pleasant, while Table 94 presents descriptive statistics for transparency in Lake Pleasant. The transparency in Lake Pleasant was quite variable from year to year, but appears to exhibit a decreasing trend from 1995 to 2003. The transparency in Lake Pleasant was similar to the county average until 1998, and slightly lower than the county average from 1999 to 2003, though this difference was not statistically significant.

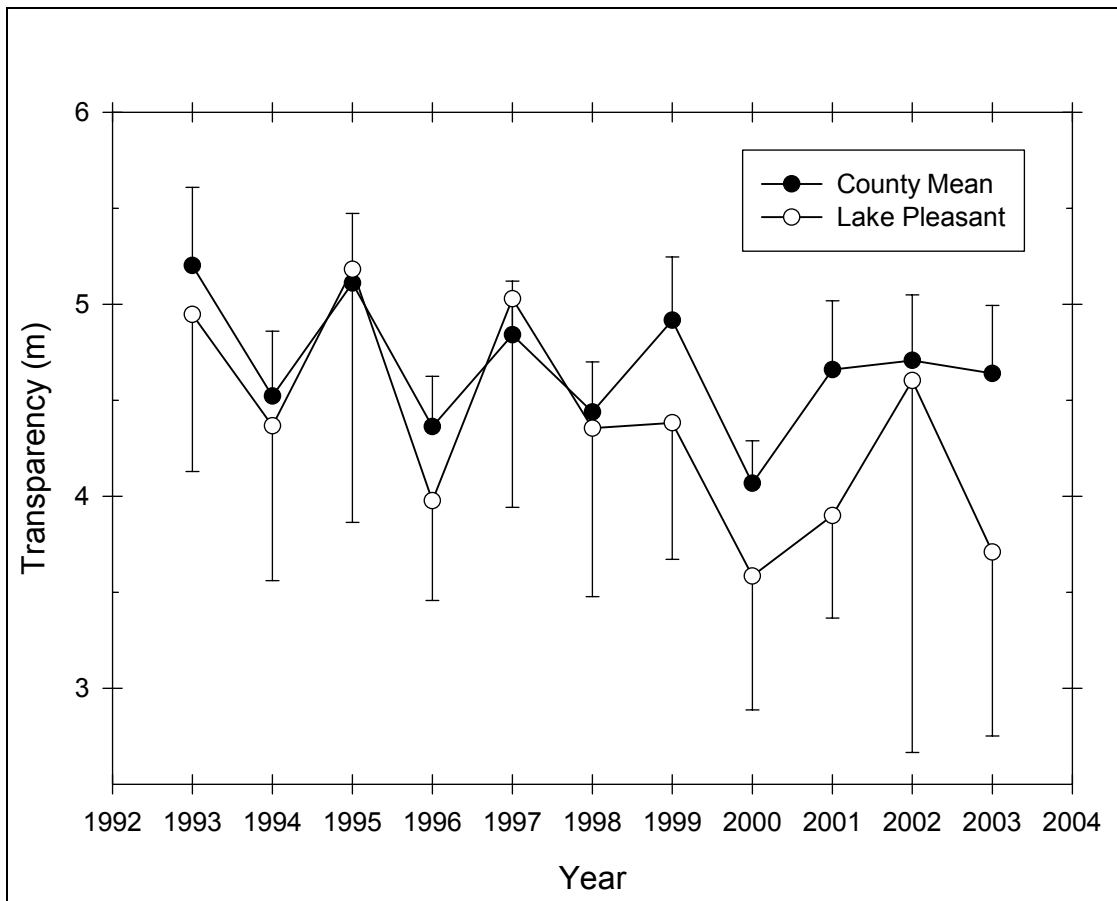


Figure 119 Seasonal mean transparency in Lake Pleasant

Table 94 – Descriptive Statistics for Transparency in Lake Pleasant

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1993	6	1	4.946	0.658	0.294	0.817
1994	6	0	4.367	0.769	0.314	0.807
1995	6	0	5.182	1.256	0.513	1.318
1996	6	0	3.977	0.495	0.202	0.519
1997	6	0	5.028	1.034	0.422	1.086

1998	6	0	4.355	0.836	0.341	0.877
1999	4	0	4.383	0.447	0.224	0.711
2000	6	0	3.585	0.665	0.271	0.698
2001	5	0	3.900	0.430	0.192	0.534
2002	4	0	4.603	1.218	0.609	1.938
2003	5	0	3.710	0.772	0.345	0.958
Year	Range	Max	Min	Median	25%	75%
1993	1.820	5.760	3.940	5.030	4.622	5.303
1994	1.900	5.500	3.600	4.150	3.700	5.100
1995	3.260	6.300	3.040	5.425	4.700	6.200
1996	1.520	4.770	3.250	3.900	3.860	4.180
1997	2.400	6.430	4.030	4.850	4.050	5.960
1998	2.210	5.760	3.550	4.125	3.670	4.900
1999	0.970	4.900	3.930	4.350	4.015	4.750
2000	1.550	4.600	3.050	3.270	3.100	4.220
2001	0.900	4.400	3.500	3.800	3.500	4.325
2002	2.810	6.010	3.200	4.600	3.650	5.555
2003	1.550	4.550	3.000	3.500	3.000	4.513
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1993	-0.688	1.762	0.242	0.389	24.730	124.047
1994	0.713	-1.258	0.253	0.259	26.200	117.360
1995	-1.055	0.558	0.243	0.307	31.090	168.984
1996	0.301	1.655	0.240	0.320	23.860	96.107
1997	0.367	-2.126	0.244	0.300	30.170	157.055
1998	1.061	0.383	0.264	0.211	26.130	117.292
1999	0.251	-3.301	0.236	0.493	17.530	77.425
2000	0.936	-1.178	0.267	0.197	21.510	79.324
2001	0.314	-2.909	0.224	0.482	19.500	76.790
2002	0.00955	-1.493	0.160	0.709	18.410	89.180
2003	0.327	-3.074	0.247	0.364	18.550	71.203

TSI

Figure 120 presents the seasonal mean nitrate trend in Lake Pleasant. Chlorophyll *a* TSI was generally within the eutrophic range. Total phosphorus TSI was in the mesotrophic range from 1993 to 1999, and within the oligotrophic range from 2000 to 2003. Transparency TSI was variable and fluctuated around the oligotrophic-mesotrophic boundary.

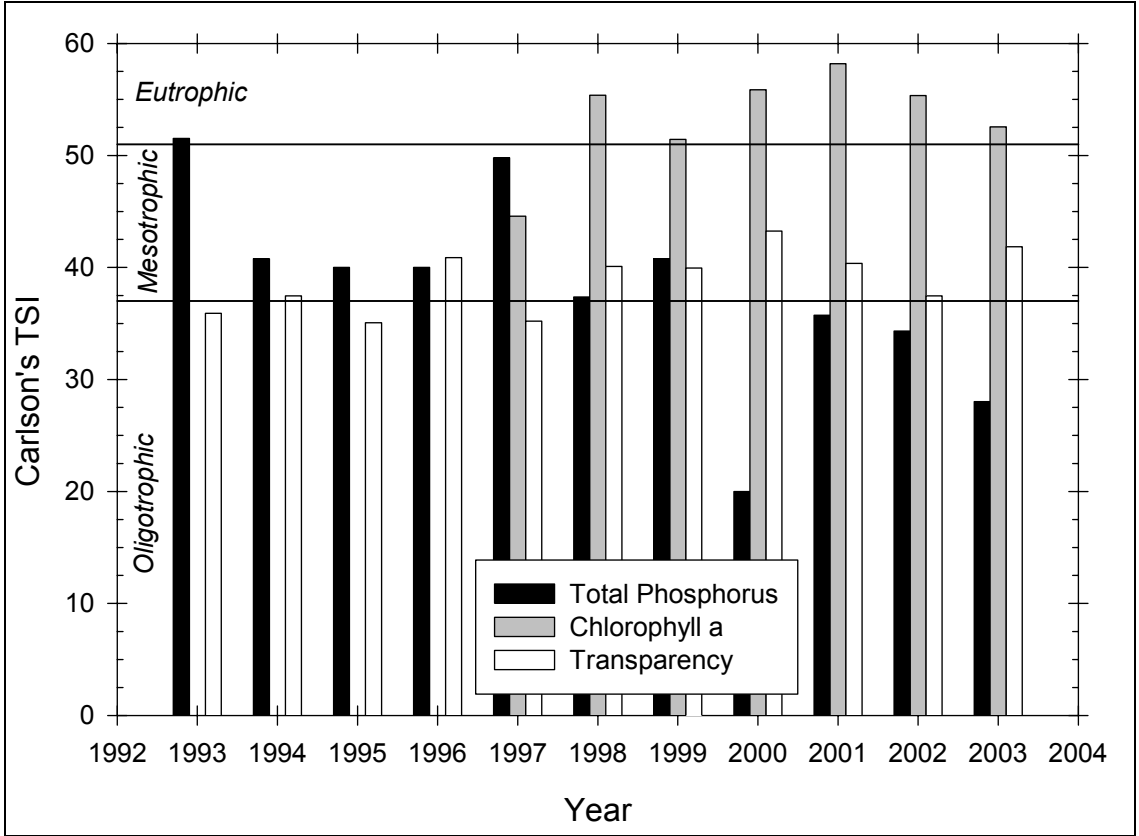


Figure 120 Carlson TSI trend in Lake Pleasant

Aluminum

Figure 121 presents the seasonal mean aluminum trend in Lake Pleasant, while Table 95 presents descriptive statistics for aluminum in Lake Pleasant. The aluminum in Lake Pleasant exhibited a slight decreasing trend from 1997 to 2002. The aluminum in Lake Pleasant was slightly lower than the county average, though this difference may not be statistically significant for all years.

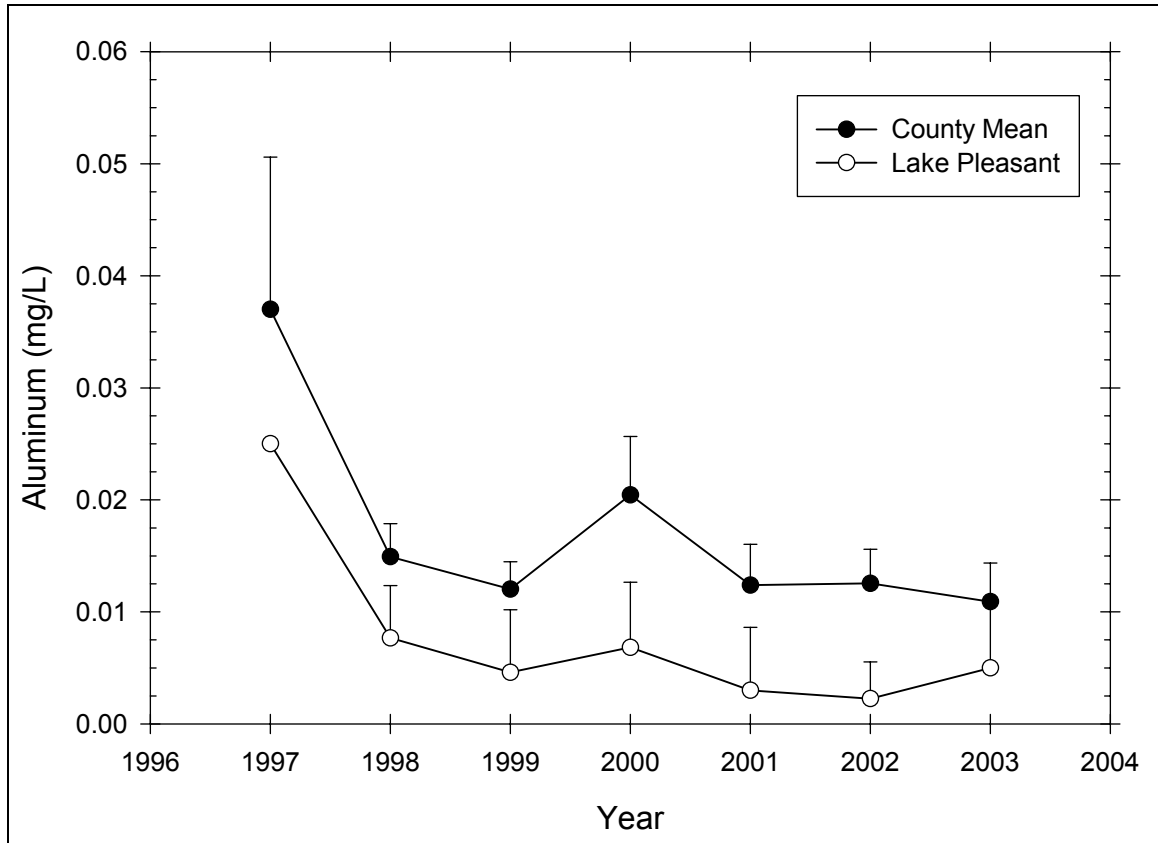


Figure 121 Seasonal mean aluminum trend in Lake Pleasant

Table 95 – Descriptive Statistics for Aluminum in Lake Pleasant

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1997	6	5	0.0250	--	--	--
1998	6	0	0.00767	0.00446	0.00182	0.00468
1999	6	1	0.00460	0.00451	0.00201	0.00559
2000	6	0	0.00683	0.00553	0.00226	0.00580
2001	6	1	0.00300	0.00453	0.00202	0.00562
2002	6	2	0.00225	0.00206	0.00103	0.00328
2003	6	2	0.00500	0.00383	0.00191	0.00609
Year	Range	Max	Min	Median	25%	75%
1997	0.000	0.0250	0.0250	0.0250	0.0250	0.0250
1998	0.01000	0.0120	0.00200	0.01000	0.00200	0.01000
1999	0.0110	0.0120	0.001000	0.00400	0.001000	0.00675
2000	0.0130	0.0130	0.000	0.00700	0.00200	0.0120
2001	0.0110	0.0110	0.000	0.001000	0.000750	0.00425
2002	0.00400	0.00400	0.000	0.00250	0.000500	0.00400
2003	0.00800	0.01000	0.00200	0.00400	0.00200	0.00800
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1997	--	--	--	--	0.0250	0.000625
1998	-0.828	-1.809	0.366	0.012	0.0460	0.000452
1999	1.420	2.115	0.265	0.282	0.0230	0.000187
2000	-0.0897	-2.467	0.217	0.448	0.0410	0.000433
2001	2.101	4.522	0.387	0.014	0.0150	0.000127

2002	-0.200	-4.858	0.302	0.219	0.00900	0.0000330
2003	0.855	-1.289	0.283	0.289	0.0200	0.000144

Calcium

Figure 122 presents the seasonal mean calcium trend in Lake Pleasant, while Table 96 presents descriptive statistics for calcium in Lake Pleasant. The calcium in Lake Pleasant exhibited an increasing trend from 1997 to 2000. The calcium in Lake Pleasant was slightly higher than the county average, though this difference was not statistically significant.

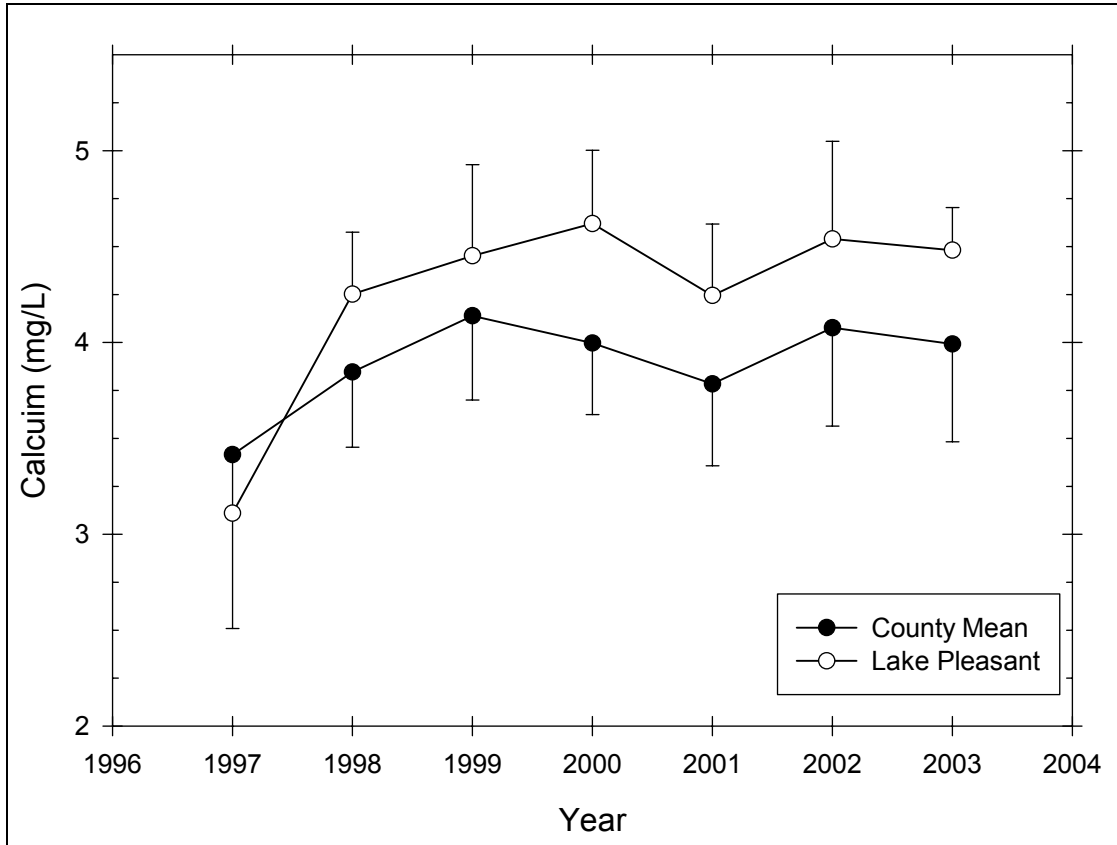


Figure 122 Seasonal mean calcium trend in Lake Pleasant

Table 96 – Descriptive Statistics for Calcium in Lake Pleasant

Year	Size	Missing	Mean	Std Dev	Std. Error	C.I. of Mean
1997	6	5	3.110	--	--	--
1998	6	0	4.252	0.308	0.126	0.323
1999	6	1	4.452	0.382	0.171	0.475
2000	6	0	4.620	0.364	0.148	0.382
2001	6	1	4.244	0.300	0.134	0.373
2002	6	2	4.540	0.320	0.160	0.509
2003	6	2	4.480	0.141	0.0704	0.224
Year	Range	Max	Min	Median	25%	75%
1997	0.000	3.110	3.110	3.110	3.110	3.110
1998	0.770	4.880	4.110	4.130	4.120	4.140

1999	0.830	4.810	3.980	4.660	4.070	4.735
2000	0.980	5.290	4.310	4.490	4.390	4.750
2001	0.760	4.570	3.810	4.310	4.020	4.473
2002	0.770	4.880	4.110	4.585	4.330	4.750
2003	0.330	4.610	4.280	4.515	4.395	4.565
Year	Skewness	Kurtosis	K-S Dist.	K-S Prob.	Sum	Sum of Squares
1997	--	--	--	--	3.110	9.672
1998	2.441	5.968	0.475	<0.001	25.510	108.934
1999	-0.572	-2.868	0.307	0.130	22.260	99.686
2000	1.569	2.382	0.221	0.422	27.720	128.728
2001	-0.660	-0.511	0.187	0.652	21.220	90.419
2002	-0.808	1.649	0.262	0.377	18.160	82.753
2003	-1.367	2.561	0.334	0.124	17.920	80.341

Calcite Saturation Index

Figure 123 presents the calcite saturation index trend in Lake Pleasant. The CSI in Lake Pleasant did not exhibit any specific trend and remained within the range of low vulnerability to acid deposition, close to the moderately vulnerable range. The CSI in Lake Pleasant was generally slightly lower than the county average, though this difference was not statistically significant.

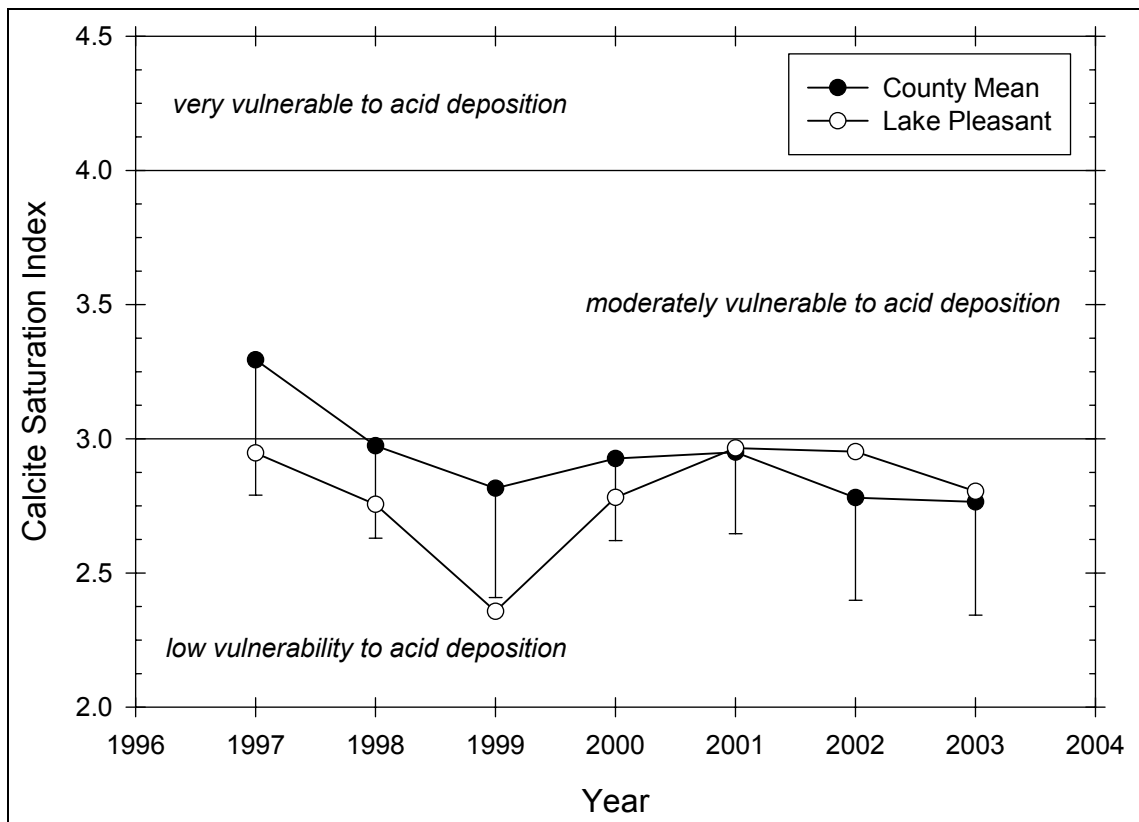


Figure 123 Seasonal mean CSI trend in Lake Pleasant