

Cottage

Lake Overview

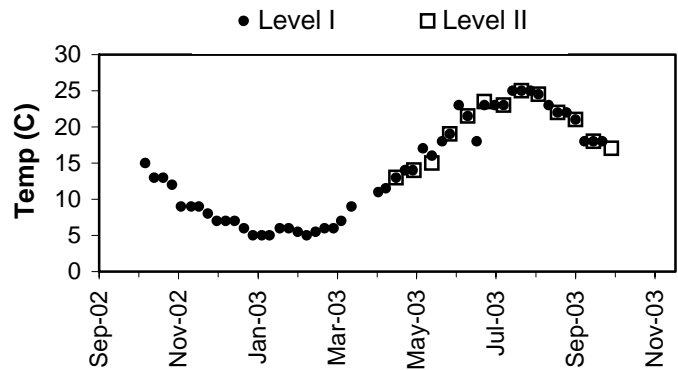
Volunteer monitoring began at Cottage Lake in 1995 and continued through 2003. The data indicate this lake is relatively high in primary productivity (eutrophic) with fair water quality. Since the lake surface makes up less than 2% of the large drainage area, direct precipitation is not as important as inlet streams, stormwater runoff and groundwater inputs. Land use analysis of 2002 aerial photographs showed over 54% of the surrounding watershed has been developed for uses other than agriculture. There are large wetlands in the basin, and land use is largely rural, although parts are currently urbanizing. Enhancement of productivity through human impacts was verified in the lake management plan (King County, 1996).

Cottage Lake has no public access boat ramp, but car top boats may be launched through the county park. Residents should monitor aquatic plants growing nearshore to catch early infestations of Eurasian milfoil, Brazilian elodea, or other noxious aquatic weeds.

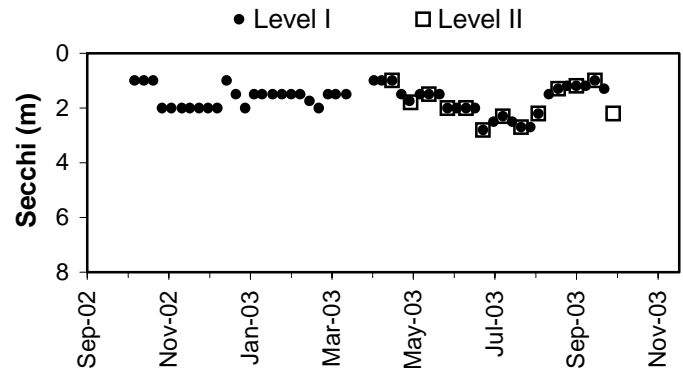
Physical Parameters

Secchi transparency ranged between 1.0 and 2.8m during the year. Surface water temperatures ranged from 5.0 to 25.0 degrees Celsius. Excellent local precipitation and water level records were available for the year, showing that the lake level varied erratically through most of the year, relating to rainfall events in winter, but also remaining at high levels in summer, likely affected by beaver and human activities.

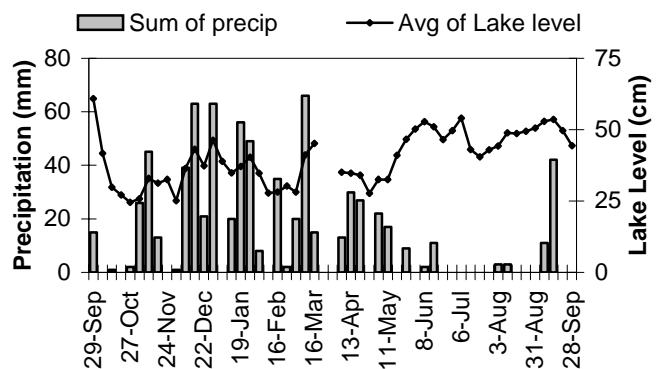
Lake Temperature



Secchi Depth

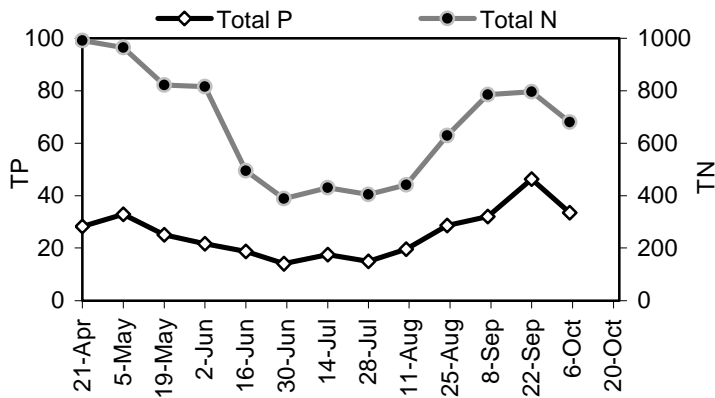


Lake Level and Precipitation

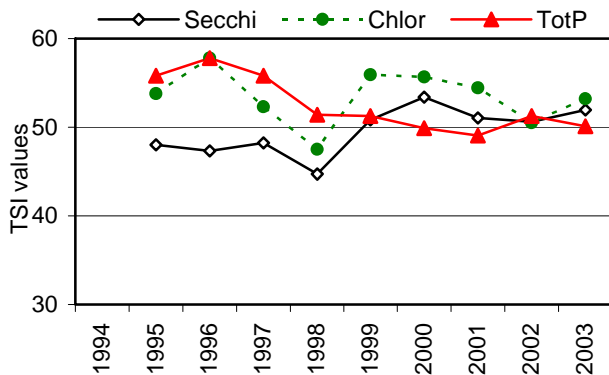


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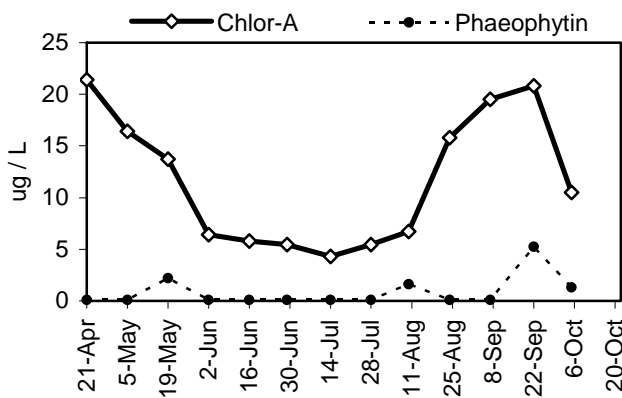
Nutrient Analysis



TSI Ratings



Chlorophyll a Concentrations (ug/L)



Nutrient Analysis and TSI Ratings

Total nitrogen declined through the spring, remained steady in summer, and increased in autumn. Total phosphorus remained fairly steady until August, when it also began to increase. The N:P ratio ranged from 17 to 38, with better conditions for bluegreens indicated in autumn. In 2003, TSI values for the three indicators were close to each other, above the threshold for eutrophic conditions, similar to 2000-2001.

Chlorophyll and Algae

Chlorophyll content decreased from a high in April to low values that remained steady through summer and then increased greatly in September. The diatom *Asterionella formosa* was dominant in spring, but gave way to the bluegreens *Aphanizomenon* and *Anabaena* in the autumn.

Common algae	Group
<i>Aphanizomenon flos-aquae</i>	bluegreen
<i>Asterionella formosa</i>	diatom-chrysophyte
<i>Anabaena</i> sp.	bluegreen

Cottage

2003 Level I Data

Daily Data Summary

Week of	Sum of precip. (mm)	# of days	Avg of lake level (cm)	# of days
29-Sep-02	15.0	5	60.8	5
6-Oct-02	0.0	7	41.6	8
13-Oct-02	1.0	7	29.9	7
20-Oct-02	0.0	7	27.2	6
27-Oct-02	2.0	7	24.6	7
3-Nov-02	26.0	7	25.9	7
10-Nov-02	45.0	7	32.9	7
17-Nov-02	13.0	7	31.3	7
24-Nov-02	0.0	7	32.6	7
1-Dec-02	1.0	7	25.1	7
8-Dec-02	39.0	7	36.4	7
15-Dec-02	63.0	7	43.1	7
22-Dec-02	21.0	7	37.3	7
29-Dec-02	63.0	7	46.3	7
5-Jan-03	0.0	7	38.9	7
12-Jan-03	20.0	7	34.9	7
19-Jan-03	56.0	7	37.0	7
26-Jan-03	49.0	7	40.3	7
2-Feb-03	8.0	7	34.7	7
9-Feb-03	0.0	7	27.9	7
16-Feb-03	35.0	7	28.1	7
23-Feb-03	2.0	7	30.3	7
2-Mar-03	20.0	7	28.1	7
9-Mar-03	66.0	7	41.1	7
16-Mar-03	15.0	6	45.2	6
23-Mar-03				
30-Mar-03				
6-Apr-03	13.0	4	35.0	4
13-Apr-03	30.0	7	34.7	7
20-Apr-03	27.0	7	34.0	7
27-Apr-03	0.0	7	27.7	7
4-May-03	22.0	7	32.6	7
11-May-03	17.0	7	32.6	7
18-May-03	0.0	7	41.0	7
25-May-03	9.0	7	46.6	7
1-Jun-03	0.0	7	50.1	7
8-Jun-03	2.0	7	52.7	7
15-Jun-03	11.0	7	51.0	7
22-Jun-03	0.0	7	46.4	7
29-Jun-03	0.0	7	49.6	7
6-Jul-03	0.0	7	54.0	7
13-Jul-03	0.0	7	43.0	7
20-Jul-03	0.0	7	40.4	7
27-Jul-03	0.0	7	42.9	7
3-Aug-03	3.0	7	44.3	7
10-Aug-03	3.0	7	48.9	7
17-Aug-03	0.0	7	48.6	7
24-Aug-03	0.0	7	49.4	7
31-Aug-03	0.0	7	50.6	7
7-Sep-03	11.0	7	52.9	7
14-Sep-03	42.0	7	53.6	7
21-Sep-03	0.0	7	49.6	7
28-Sep-03	0.0	3	44.3	3
Min	0.0		24.6	
Max	66.0		60.8	
Total	750.0			

Weekly Data Summary

Sample date	Sample time	Secchi (m)	Temp (°C)	Algae* (Shore)	Algae* (at site)	Goose Count*
7-Oct-02	13:00	1.0	15.0	C3	C3	
14-Oct-02	13:00	1.0	13.0	C3	C3	
21-Oct-02	13:00	1.0	13.0	C3	C3	
28-Oct-02	13:00	2.0	12.0	C1	C1	
4-Nov-02	12:30	2.0	9.0	C1	C1	
12-Nov-02	12:30	2.0	9.0	C1	C1	
18-Nov-02	13:00	2.0	9.0	C1	C1	
25-Nov-02	13:00	2.0	8.0	C1	C1	
2-Dec-02	13:00	2.0	7.0			
9-Dec-02	13:00	2.0	7.0			
16-Dec-02	13:00	1.0	7.0			
23-Dec-02	13:00	1.5	6.0			
30-Dec-02	13:00	2.0	5.0			
6-Jan-03	13:00	1.5	5.0			
12-Jan-03	13:00	1.5	5.0			
20-Jan-03	13:00	1.5	6.0			
27-Jan-03	12:00	1.5	6.0			
3-Feb-03	13:00	1.5	5.5			
10-Feb-03	13:00	1.5	5.0			
17-Feb-03	13:00	1.8	5.5			
24-Feb-03	12:30	2.0	6.0			
3-Mar-03	13:00	1.5	6.0			
9-Mar-03	13:00	1.5	7.0			
17-Mar-03	13:00	1.5	9.0			
7-Apr-03	14:00	1.0	11.0	P1	P1	
13-Apr-03	14:30	1.0	11.5	P1	P1	
21-Apr-03	14:00	1.0	13.0	P1	P1	
28-Apr-03	12:30	1.5	14.0	P1	P1	
4-May-03	13:00	1.8	14.0	P1	P1	
12-May-03	13:00	1.5	17.0	P1	P1	
19-May-03	12:00	1.5	16.0	P1	P1	
27-May-03	13:00	1.5	18.0	P1	P1	
2-Jun-03	13:00	2.0	19.0	P1	P1	
9-Jun-03	13:00	2.0	23.0	P1	P1	
16-Jun-03	13:30	2.0	21.5	P1	P1	
23-Jun-03	13:00	2.0	18.0	P2	P2	
29-Jun-03	11:45	2.8	23.0	P2	P1	
7-Jul-03	13:30	2.5	23.0	P2	P1	
14-Jul-03	13:00	2.3	23.0	P2	P1	
21-Jul-03	14:00	2.5	25.0	P3	P1	
28-Jul-03	15:00	2.7	25.0	P3	P1	
4-Aug-03	14:00	2.7	25.0	P3	P1	
10-Aug-03	15:00	2.2	24.5	P3	P1	
18-Aug-03	13:00	1.5	23.0	P3	P2	
25-Aug-03	12:00	1.3	22.0	P3	P2	
1-Sep-03	12:00	1.2	22.0	P3	P2	
8-Sep-03	13:00	1.2	21.0	P3	P2	
15-Sep-03	13:00	1.2	18.0	P3	P2	
22-Sep-03	14:00	1.0	18.0	P3	P3	
29-Sep-03	12:00	1.3	18.0	P3	P3	
Min		1.0	5.0			
Max		2.8	25.0			

