

Shady

Lake Overview

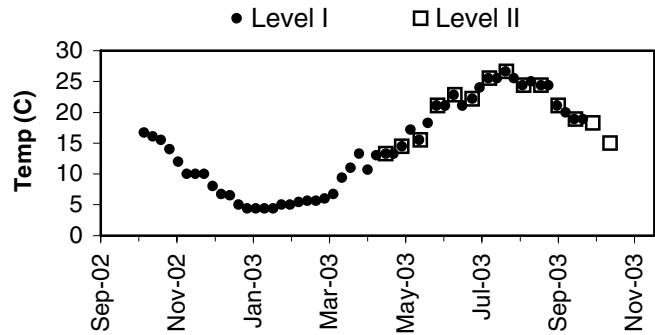
Volunteer monitoring began at Shady Lake in the 1980s and has continued through 2003. The data indicate this lake is low to moderate in primary productivity (oligotrophic - mesotrophic) with very good water quality. Since the lake surface makes up about 10% of the drainage area, direct precipitation is important in addition to watershed inputs. Land use analysis of 2002 aerial photographs showed over 40% of the surrounding watershed has been developed for uses other than agriculture or forestry.

Shady Lake has a public access boat launch, and patches of Eurasian milfoil were found in 2001. Nuisance populations of *Potamogeton* (pondweed) have also been reported. Residents should keep a close eye on aquatic plants growing nearshore to catch increases in these species, Brazilian elodea, or other aquatic noxious weeds.

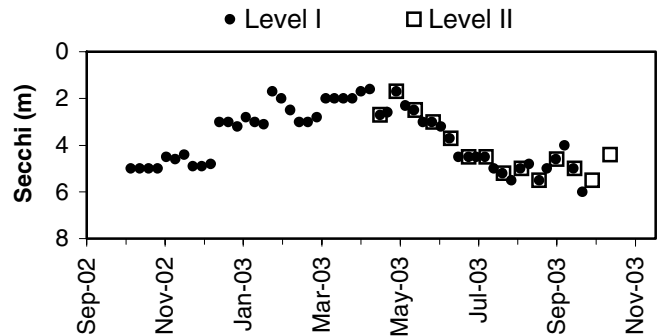
Physical Parameters

Secchi transparency ranged from 1.6 to 6.0m through the year. Annual surface water temperatures ranged from 4.4 to 26.6 degrees Celsius. Excellent precipitation and water level records were kept, showing that the lake level responded sensitively to precipitation, achieving high stands in the winter and decreasing slowly over spring and summer.

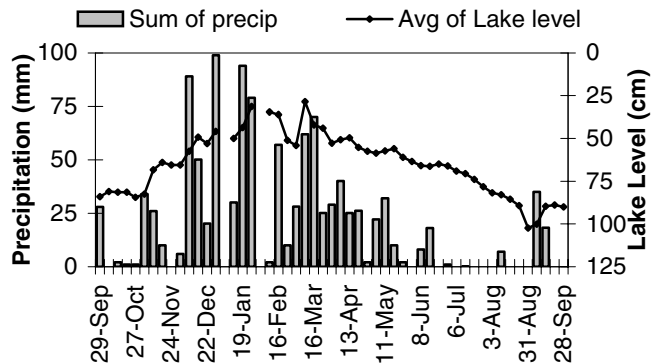
Lake Temperature



Secchi Depth

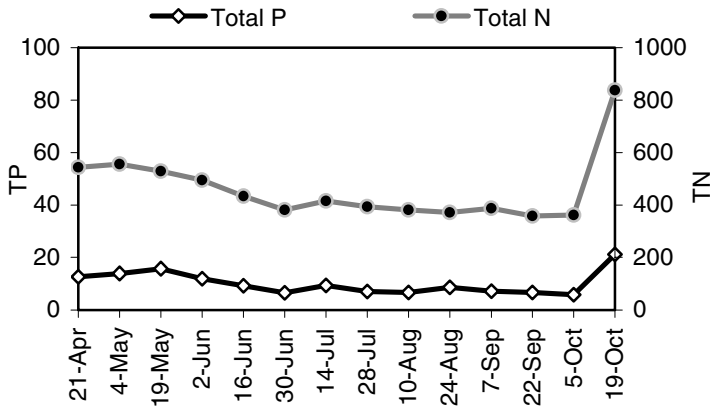


Lake Level and Precipitation

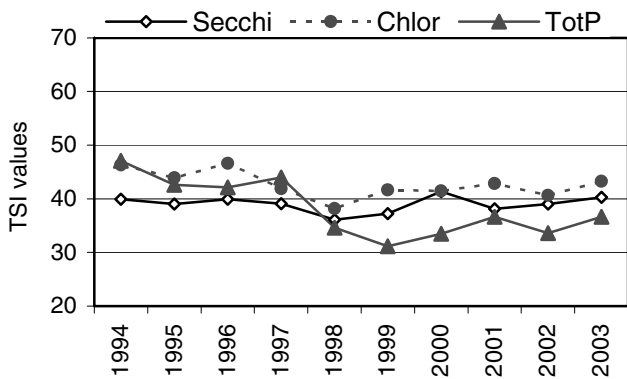


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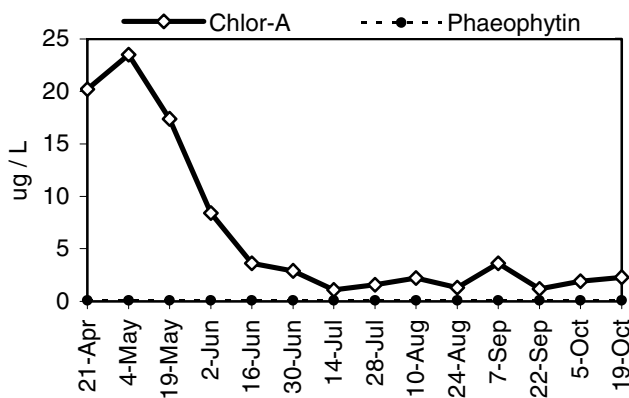
Nutrient Analysis



TSI Ratings



Chlorophyll a Concentrations (ug/L)



Common algae

Group

unidentified species	chrysophyte
<i>Dinobryon spp.</i>	chrysophyte
<i>Anacystis spp.</i>	bluegreen

Nutrient Analysis and TSI Ratings

Total nitrogen decreased slightly through spring and then remained stable until the last sample date, when it rose dramatically. Total phosphorus was stable until the last date as well. The N:P ratio ranged from 34 to 61. In 2003, the TSI-Chlor values were spread across the border between oligotrophy and mesotrophy, with the TSI-TP substantially lower, similar to recent years.

Chlorophyll and Algae

Chlorophyll concentrations peaked in early May and dropped by July to low values, which were maintained through the rest of the sample season. The algae in the plankton were dominated by the chrysophytes *Dinobryon* and an unidentified solitary species. Other commonly occurring algae included the diatoms *Asterionella* and *Synedra*, as well as the bluegreen *Anacystis* and the chlorophytes *Ankistrodesmus* and *Botryococcus*.

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2003 Level I Data

Daily Data Summary

Weekly Data Summary

Week of	Sum of precip. (mm)	# of days	Avg of lake level (cm) **	# of days	Sample date	Sample time	Secchi (m)	Temp (°C)	Algae* (Shore)	Algae* (at site)	Goose Count*
29-Sep-02	28.0	5	84.0	1							
6-Oct-02	0.0	7	81.0	1	6-Oct-02	17:40	5.0	16.7	NA	NA	2
13-Oct-02	2.1	7	81.5	1	13-Oct-02	16:00	5.0	16.1	NA	NA	2
20-Oct-02	1.0	7	81.5	1	20-Oct-02	17:30	5.0	15.5	NA	NA	3
27-Oct-02	1.0	7	84.5	2	27-Oct-02	16:00	5.0	14.0	NA	NA	12
3-Nov-02	34.0	7	82.5	2	3-Nov-02	16:00	4.5	12.0	P1	P1	6
10-Nov-02	26.0	7	68.3	3	10-Nov-02	15:00	4.6	10.0	P2	P2	12
17-Nov-02	10.0	7	64.0	1	17-Nov-02	16:00	4.4	10.0	P1	P1	12
24-Nov-02	0.0	7	65.5	2	24-Nov-02	15:30	4.9	10.0	P1	P1	12
1-Dec-02	6.0	7	65.5	1	1-Dec-03	14:30	4.9	8.0	P1	P1	12
8-Dec-02	89.0	7	57.5	2	8-Dec-03	15:30	4.8	6.7	P1	P1	24
15-Dec-02	50.1	7	49.3	2	15-Dec-03	15:00	3.0	6.5	P1	P1	24
22-Dec-02	20.1	7	53.0	1	22-Dec-03	14:00	3.0	5.0	P1	P1	24
29-Dec-02	99.0	7	45.8	4	29-Dec-03	14:30	3.2	4.4	P1	P1	20
5-Jan-03	0.0	7			5-Jan-03	14:00	2.8	4.4	P1	P1	20
12-Jan-03	30.0	7	50.0	1	12-Jan-03	14:00	3.0	4.4	P1	P1	20
19-Jan-03	94.1	7	43.5	2	19-Jan-03	14:00	3.1	4.4	P1	P1	24
26-Jan-03	79.0	7	31.3	3	26-Jan-03	12:30	1.7	5.0	P1	P1	24
2-Feb-03	0.0	7			2-Feb-03	12:30	2.0	5.0	P1	P1	24
9-Feb-03	2.1	7	34.5	1	9-Feb-03	14:00	2.5	5.4	P1	P1	24
16-Feb-03	57.1	7	36.0	1	16-Feb-03	12:20	3.0	5.6	P1	P1	12
23-Feb-03	10.1	7	51.0	4	23-Feb-03	12:00	3.0	5.6	P1	P1	12
2-Mar-03	28.1	7	54.0	1	2-Mar-03	14:00	2.8	6.0	P1	P1	6
9-Mar-03	62.1	7	28.5	1	9-Mar-03	14:30	2.0	6.7	C2	C2	4
16-Mar-03	70.1	7	42.0	2	16-Mar-03	15:00	2.0	9.4	P2	P2	4
23-Mar-03	25.1	7	44.0	1	23-Mar-03	15:30	2.0	11.0	P2	P2	4
30-Mar-03	29.0	7	52.7	4	30-Mar-03	14:20	2.0	13.3	P3	P3	6
6-Apr-03	40.1	7	50.8	2	6-Apr-03	15:14	1.7	10.7	P3	P3	6
13-Apr-03	25.2	7	49.5	3	13-Apr-03	13:20	1.6	13.0	P3	P3	6
20-Apr-03	26.2	7	55.3	2	21-Apr-03	14:30	2.7	13.3	P3	P3	6
27-Apr-03	2.1	7	57.5	3	27-Apr-03	11:39	2.6	13.3	P3	P3	5
4-May-03	22.0	7	58.5	4	4-May-03	17:00	1.7	14.5	P3	P3	2
11-May-03	32.0	7	57.3	2	11-May-03	14:30	2.3	17.2	P3	P3	10
18-May-03	10.0	7	56.0	2	18-May-03	14:30	2.5	15.5	P2	P2	10
25-May-03	2.1	7	61.0	3	25-May-03	11:45	3.0	18.3	P1	P1	10
1-Jun-03	0.1	7	63.5	2	1-Jun-03	14:20	3.0	21.1	P2	P2	24
8-Jun-03	8.1	7	65.9	4	8-Jun-03	15:00	3.2	21.1	P1	P1	19
15-Jun-03	18.1	7	66.3	2	15-Jun-03	14:25	3.7	22.8	P1	P1	19
22-Jun-03	0.1	7	65.0	2	22-Jun-03	14:00	4.5	21.1	P1	P1	19
29-Jun-03	1.0	7	66.0	2	30-Jun-03	16:13	4.5	22.2	P1	P1	14
6-Jul-03	0.0	7	69.0	1	6-Jul-03	14:00	4.5	24.0	P1	P1	1
13-Jul-03	0.1	7	70.5	2	13-Jul-03	18:27	4.5	25.5	P1	P1	6
20-Jul-03	0.0	7	74.0	1	20-Jul-03	14:30	5.0	25.5	P1	P1	16
27-Jul-03	0.0	7	78.2	4	27-Jul-03	18:40	5.2	26.6			14
3-Aug-03	0.1	7	81.8	3	3-Aug-03	15:30	5.5	25.5	P1	P1	14
10-Aug-03	7.0	7	83.0	1	10-Aug-03	13:40	5.0	24.4	P1	P1	16
17-Aug-03	0.0	7	85.6	2	17-Aug-03	16:30	4.8	25.0	P1	P1	16
24-Aug-03	0.0	7	89.3	2	25-Aug-03	18:20	5.5	24.4	P1	P1	16
31-Aug-03	0.0	7	102.5	7	31-Aug-03	18:30	5.0	24.4	P1	P1	24
7-Sep-03	35.0	7	100.3	6	7-Sep-03	19:00	4.6	21.1	P1	P1	25
14-Sep-03	18.1	7	89.8	2	14-Sep-03	16:00	4.0	20.0	P1	P1	20
21-Sep-03	0.0	7	89.0	1	21-Sep-03	14:30	5.0	18.9	P1	P1	20
28-Sep-03	0.0	3	90.0	3	28-Sep-03	15:00	6.0	18.9	NA	NA	30
Min	0.0		28.5		Min		1.6	4.4			1
Max	99.0		102.5		Max		6.0	26.6			30
Total	1099.8										

Date (2003)	Temp (°C)	Secchi (m)	Chl-a (µg/l)	TP (µg/l)	TN (µg/l)	Algae Obsv.	N:P	Calculated TSI			Notes
								Secc	chl-a	TP	
21-Apr	13.3	2.7	20.2	12.7	544	3	43	45.7	60.1	40.8	Algae has been decreasing last 4 weeks.
4-May	14.5	1.7	23.5	13.9	556	3	40	52.3	61.5	42.1	Very heavy brownish algae.
19-May	15.5	2.5	17.4	15.8	529	2	33	46.8	58.6	44.0	Algae is decreasing in count.
2-Jun	21.1	3.0	8.4	12.0	495	2	41	44.1	51.5	40.0	
16-Jun	22.8	3.7	3.6	9.3	434	1	47	41.1	43.1	36.3	
30-Jun	22.2	4.5	2.9	6.6	382	1	58	38.3	41.0	31.4	
14-Jul	25.5	4.5	1.1	9.4	416	1	44	38.3	31.5	36.5	
28-Jul	26.6	5.2	1.6	7.1	394	1	55	36.2	35.2	32.4	
11-Aug	24.4	5.0	2.2	6.7	381	1	57	36.8	38.5	31.6	
25-Aug	24.4	5.5	1.3	8.7	372	1	43	35.4	33.1	35.4	
8-Sep	21.1	4.6	3.6	7.2	388	1	54	38.0	43.1	32.6	
22-Sep	18.9	5.0	1.2	6.7	358	1	53	36.8	32.4	31.6	
6-Oct	18.3	5.5	1.9	5.9	362	1	61	35.4	37.0	29.8	Clear water; P1 or lower.
20-Oct	15.0	4.4	2.3	21.2	838	1	40	38.6	38.7	48.2	
	Temp (°C)	Secchi (m)	Chl-a (µg/l)	TP (µg/l)	TN (µg/l)	Algae Obsv.	N:P	Calculated TSI			
								Secc	chl-a	TP	
Mean	20.3	4.1	6.5	10.2	460.6	1.4	48	40.3	43.2	36.6	TSI Average = 40.0
Median	21.1	4.5	2.6	9.0	405.0	1	45	38.3	39.9	35.8	
Min	13.3	1.7	1.1	5.9	358.0	1	33	35.4	31.5	29.8	
Max	26.6	5.5	23.5	21.2	838.0	3	61	52.3	61.5	48.2	
Count	14	14	14	14	14	14	14	14	14	14	