

Mahoney Lake (Unionville City Lake)

Putnam County

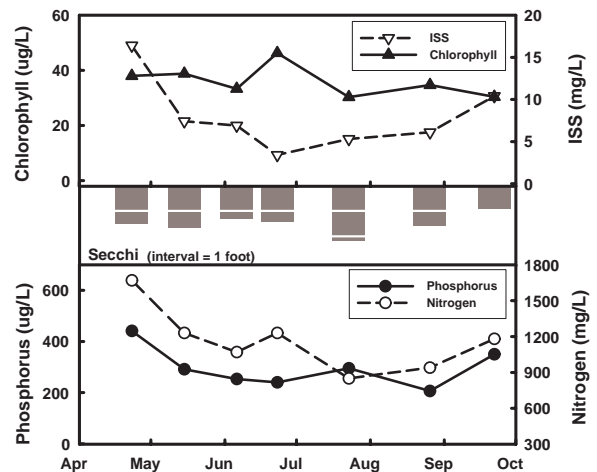


The 2008 suspended sediment concentrations were highest in the early and late season samples. For the majority of the season, concentrations were in the 5-7 mg/L range; higher than many Missouri lakes, but not unusual for a wet year in north Missouri. Chlorophyll concentrations at Site 1 were quite stable during the season, remaining high in the 30-40 ug/L range. Chlorophyll concentrations varied more and were slightly lower at Site 2 than at Site 1.

Phosphorus concentrations were extremely high during 2008 at both sites, while nitrogen concentrations were typical of the region. The ratio of nitrogen to phosphorus (N:P ratio) was extremely low, indicating the presence of excess phosphorus and implying nitrogen limitation of the algae. A typical Missouri N:P ratio is 20 or 25, while the 2008 N:P ratio at Unionville Lake during 2008 was only 4.

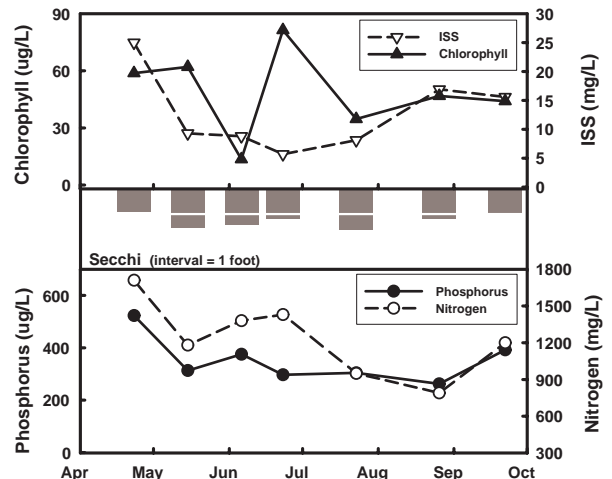
Site 1

Date	Secchi (inches)	TP (µg/L)	TN (µg/L)	CHL (µg/L)	ISS (mg/L)
4/23	18	441	1670	38.0	16.4
5/15	20	291	1230	38.8	7.4
6/6	16	253	1070	33.3	6.9
6/23	17	240	1230	46.3	3.4
7/23	26	295	850	30.3	5.3
8/26	19	206	940	34.7	6.1
9/22	11	350	1180	30.4	10.4
Mean	18	288	1143	49.5	7.2



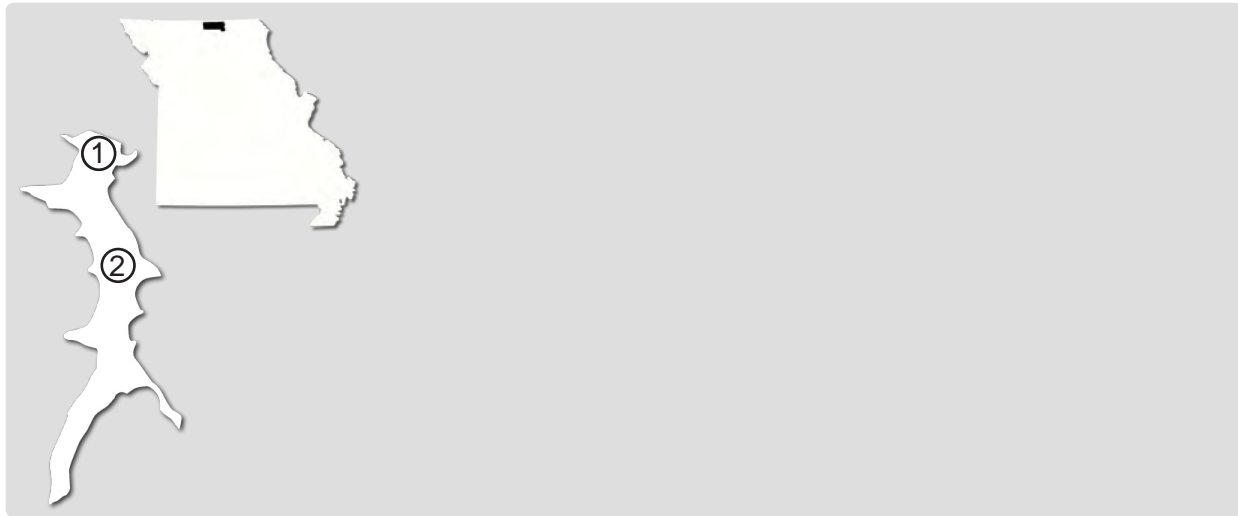
Site 2

Date	Secchi (inches)	TP (µg/L)	TN (µg/L)	CHL (µg/L)	ISS (mg/L)
4/23	11	523	1710	58.8	25
5/15	18	313	1180	62.1	9.3
6/6	17	375	1380	13.5	8.8
6/23	14	297	1430	81.4	5.7
7/23	19	304	950	34.7	8.1
8/26	14	262	790	46.8	16.9
9/22	12	392	1200	44.1	15.6
Mean	15	344	1200	43.3	11.4



Mahoney Lake (Unionville City Lake), continued

Putnam County



Wet years commonly correlate with higher phosphorus concentrations in Missouri's lakes. More rain means increased runoff, which transports phosphorus from the watershed into the lake. This runoff also transports more inorganic suspended solids (ISS) and, to a lesser degree, nitrogen to the lake. In 2008 however, the ISS and nitrogen values for the summer were very similar to long-term mean values in Mahoney Lake. Apparently the wet conditions of 2008 cannot completely explain the increase in phosphorus at Site 1. This suggests that there is another cause for the dramatic rise in phosphorus concentrations in Mahoney Lake.

As with Site 1, phosphorus concentrations at site 2 were startlingly high in 2008, with a seasonal mean double the concentrations observed in 2007 and 4 times higher than observed in 2006. The 2008 mean nitrogen concentration was only marginally higher than observed in previous years. The result is a decreasing ratio of nitrogen to phosphorus (N:P ratio) and an increased potential for blue-green algae blooms.

