

Hazel Creek Lake, Site 1



2009 DATA

Adair County
Latitude: 40.2985 Longitude: -92.628

| Date | 4/28/09 | X | X | X | 7/16 | 8/6 | 8/21 | 9/18 | Mean |
|-----------------|---------|---|---|---|------|------|------|------|------|
| Secchi (inches) | 24 | | | | 51 | 38 | 40 | 40 | 38 |
| TP (µg/L) | 34 | | | | 25 | 28 | 38 | 35 | 32 |
| TN (µg/L) | 910 | | | | 790 | 630 | 690 | 750 | 748 |
| CHL (µg/L) | 4.3 | | | | 7.9 | 23.0 | 31.2 | 33.2 | 15.2 |
| ISS (mg/L) | 6.9 | | | | 1.8 | 4.0 | 3.4 | 2.6 | 3.4 |

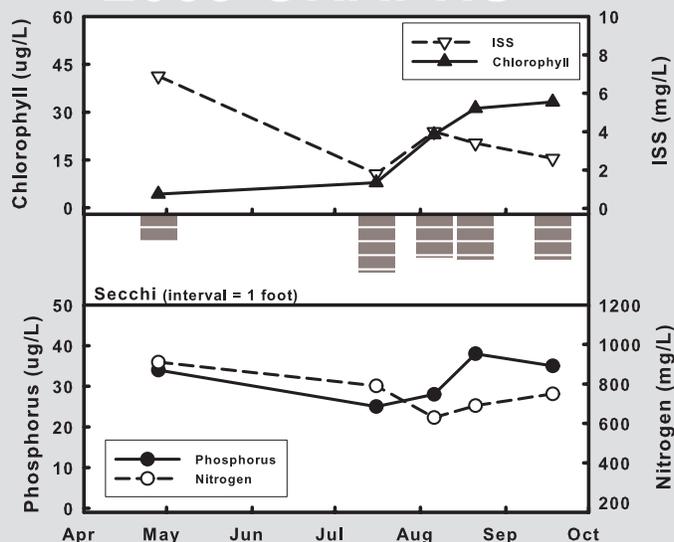
The water quality parameters displayed different patterns and amounts of variation during the 2009 sample season. Phosphorus and nitrogen concentrations were generally stable among the five samples, with ranges that were lower than normal for the average Missouri lake. In contrast, chlorophyll started out low in April and increased by almost 8 fold by September. The increase in chlorophyll was not a function of changes in nutrients, but instead a function of increased light availability relating to decreased inorganic suspended sediments (ISS). The maximum ISS value was measured in April and correlated with the shallowest Secchi transparency reading, underlining the influence ISS has on light penetration into the lake.

may be on the rise at the dam site of Hazel Creek. Care should be taken in interpreting the graph as two of the five summers are represented by only three samples each. Three samples during an individual summer is the minimum required for water quality assessment, and monitoring at this level reduces our ability to identify long-term changes. ISS trends do not reflect the increases in phosphorus. This is interesting because in most northern Missouri lakes these two parameters correspond tightly.

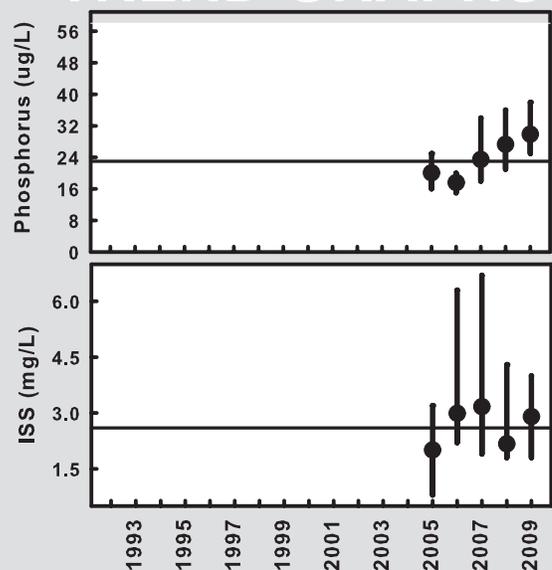


The trend graph suggests that phosphorus

2009 GRAPHS



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See pages 10-11 for help interpreting graphs

Hazel Creek Lake, Site 2



2009 DATA

Name of County
 Latitude: 40.2805 Longitude: -92.6045

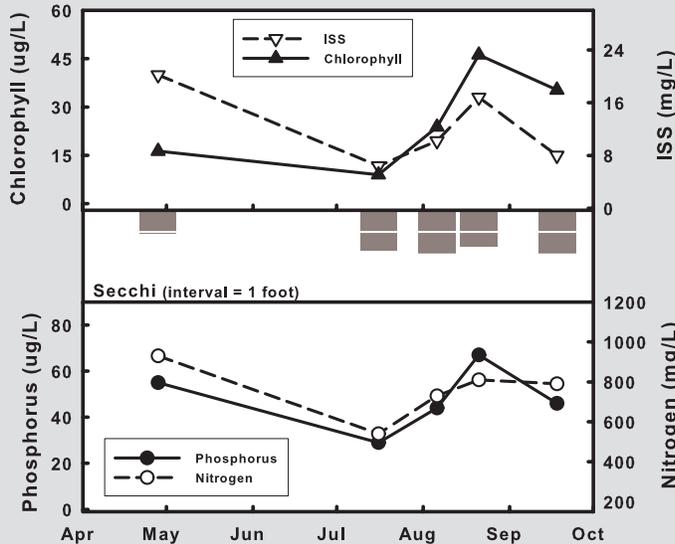
| Date | 4/28/09 | X | X | X | 7/16 | 8/6 | 8/21 | 9/18 | Mean |
|-----------------|---------|---|---|---|------|------|------|------|------|
| Secchi (inches) | 13 | | | | 22 | 24 | 20 | 24 | 20 |
| TP (µg/L) | 55 | | | | 29 | 44 | 67 | 46 | 46 |
| TN (µg/L) | 930 | | | | 540 | 730 | 810 | 790 | 748 |
| CHL (µg/L) | 16.3 | | | | 9.0 | 23.8 | 46.2 | 35.3 | 22.4 |
| ISS (mg/L) | 20.2 | | | | 6.4 | 10.2 | 16.8 | 8.0 | 11.2 |

All of the water quality parameters at Site 2, with the exception of Secchi transparency, followed the same general pattern during the 2009 season. Nutrient, chlorophyll and inorganic suspended sediment (ISS) concentrations were low in July relative to the April sample, with an increase in late August. Secchi transparency was low in April (corresponding to high ISS) and stable during the late season. Water quality at Site 2 did not differ from Site 1 as much as might be expected given the sites are located on different ends of the lake. There was slightly more phosphorus and chlorophyll at Site 2, but not a large difference. ISS levels were notably higher at Site 2.

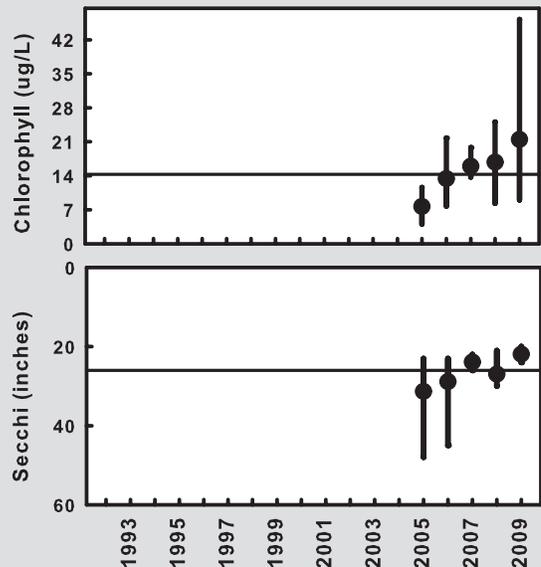
Chlorophyll has been trending upward over the last five years at Site 2. It would seem that water clarity reflects the increase in algal chlorophyll, but interestingly the last three summers have also registered higher ISS concentrations (not shown). The loss of water clarity can be attributed to increases in both algal biomass and ISS.



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Hazel Creek Lake



Site 3

2009 DATA

Cole County
 Latitude: 40.2772 Longitude: -92.6092

| Date | X | X | X | X | X | 8/6 | 8/21 | 9/18 | Mean |
|-----------------|---|---|---|---|---|------|------|------|------|
| Secchi (inches) | | | | | | 19 | 9 | 16 | 14 |
| TP (µg/L) | | | | | | 93 | 202 | 102 | 124 |
| TN (µg/L) | | | | | | 1000 | 1470 | 1110 | 1177 |
| CHL (µg/L) | | | | | | 49.7 | 27.4 | 50.6 | 41.0 |
| ISS (mg/L) | | | | | | 10.9 | 76.7 | 13.1 | 22.2 |

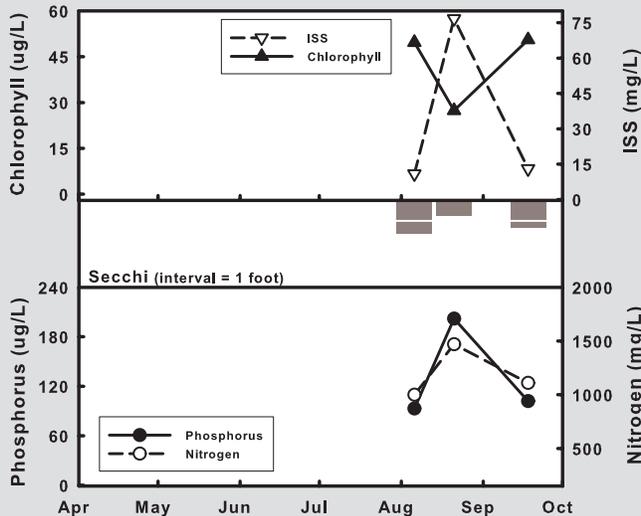
Site 3 was only sampled on three occasions during 2009, limiting any seasonal analysis. Nutrient, chlorophyll and inorganic suspended sediment (ISS) values were considerably higher at this site compared to the other sites. The data do reflect how algal chlorophyll reacts to changes in the ISS levels, with chlorophyll decreasing by about half in late August when the ISS levels increased dramatically.

The extreme measurement from late August greatly skews the data.

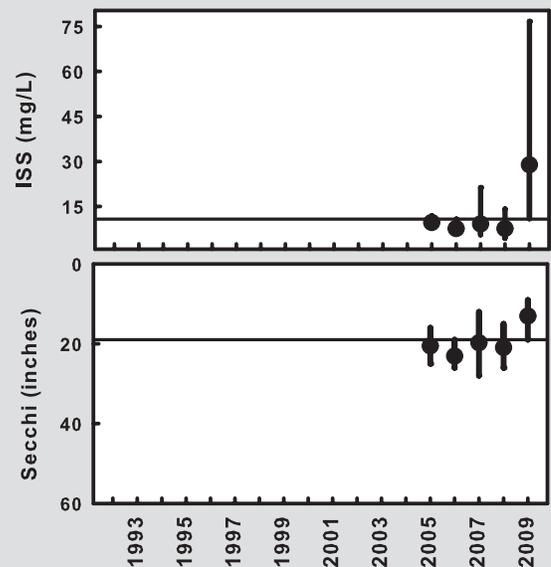


The trend graphs show that ISS and Secchi had been stable at this site during 2005-2008. While the 2009 data seem to suggest a dramatic change in water quality, care should be taken as 2009 is represented by only two summer

2009 GRAPHS



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