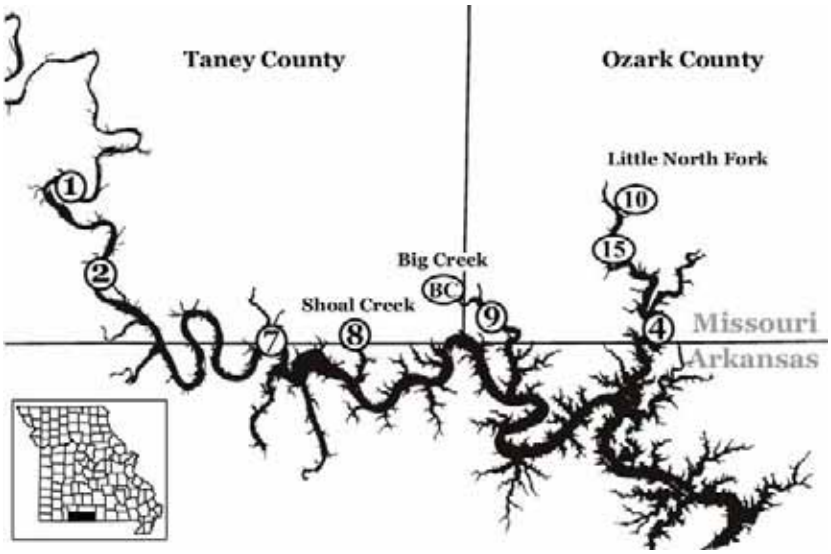
Bull Shoals Lake

Bull Shoals Lake is approximately 45,440 acres in size, the majority of which is located in Arkansas. It is the last of four reservoirs found in the White River System (it is preceded by Taneycomo, Table Rock, and Beaver Lakes).



Location of Bull Shoals Lake and its sample sites.

Descriptive statistics for Bull Shoals Lake, 2005. Geometric mean values in bold type.

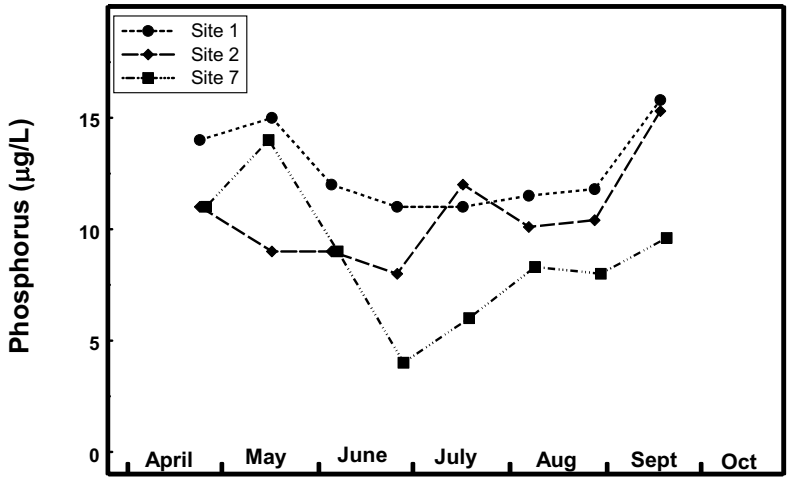
Parameters		1	2	7	8	BC	9	10	15	4
Secchi Transparency (inches)	**Mean**	**68**	**80**	**90**	**66**		**59**	**44**	**65**	**120**
	Minimum	59	59	42	36		18	33	52	67
	Maximum	86	102	152	106		96	63	78	201
Phosphorus (ug/L)	**Mean**	**13**	**10**	**8**	**10**	**5**	**7**	**26**	**13**	**6**
	Minimum	11	8	4	7	2	5	16	8	4
	Maximum	16	15	14	14	12	10	43	21	10
Nitrogen (ug/L)	**Mean**	**326**	**325**	**332**	**307**	**529**	**243**	**382**	**290**	**282**
	Minimum	170	230	240	220	330	190	290	140	220
	Maximum	820	710	520	520	720	320	890	490	420
Chlorophyll (ug/L)	**Mean**	**6.6**	**6.5**	**4.7**	**5.4**	**0.6**	**3.8**	**12.0**	**7.1**	**3.0**
	Minimum	3.7	3.6	1.3	1.8	0.2	2.0	7.1	3.5	0.5
	Maximum	11.4	14.7	12.1	12.0	1.9	12.4	18.9	12.8	10.8
ISS (mg/L)	**Mean**					**0.8**				
	Minimum					0.3				
	Maximum					1.8				

As expected, phosphorus and chlorophyll decreased and Secchi transparencies increased in the main lake as the site location moved down-lake toward the dam. Nutrients were low across the entire lake. Site 10 had the highest mean concentrations of phosphorus and chlorophyll, not uncommon for a tributary site. Site BC had the highest mean nitrogen concentration and the lowest mean phosphorus and chlorophyll concentrations due to the influence of groundwater at this site.

Bull Shoals Lake: Main Channel

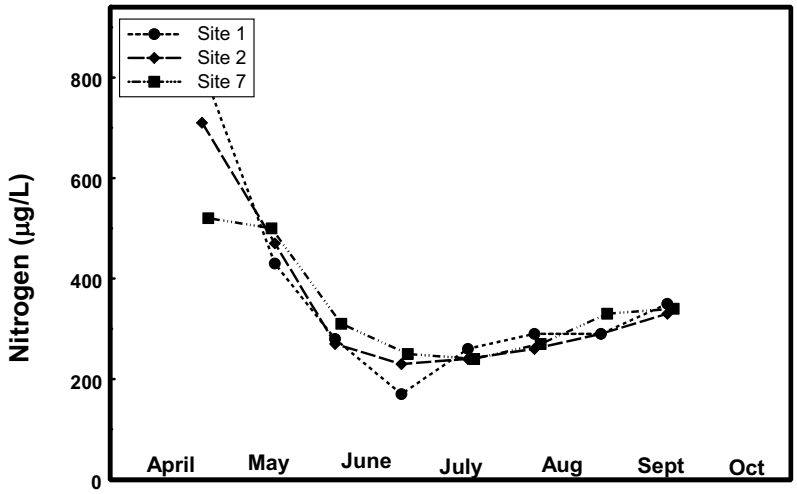
Phosphorus concentrations in the main channel of Bull Shoals Lake

Phosphorus concentrations in the main lake were very consistent throughout 2005, and did not vary much across the main lake.

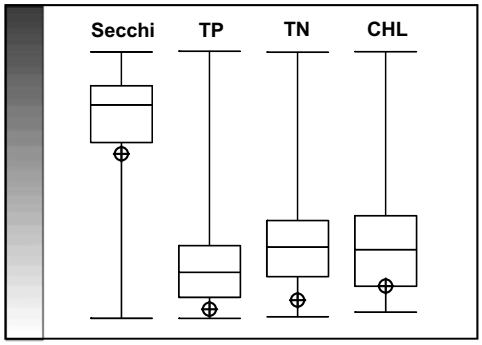


Nitrogen concentrations in the main channel of Bull Shoals Lake

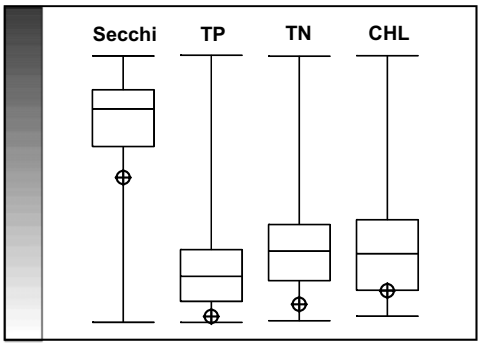
Nitrogen concentrations decreased as the sampling season progressed in 2005. All main lake sites showed this trend.



Relative Rank for
Bull Shoals Lake, Site 1



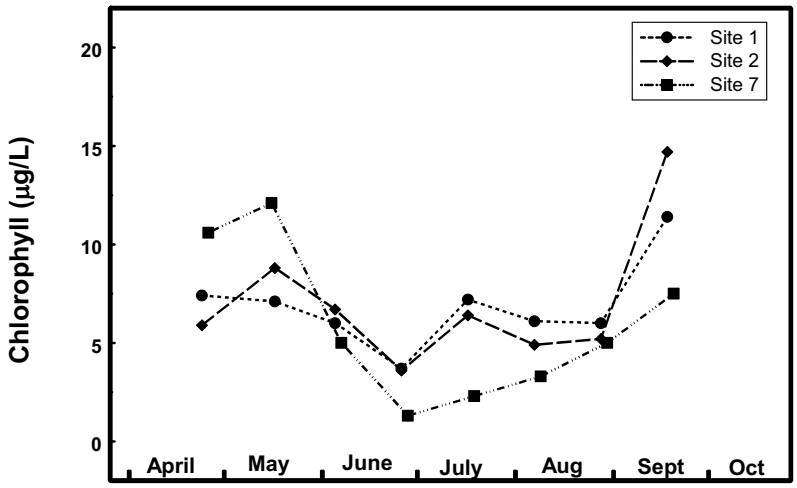
Relative Rank for
Bull Shoals Lake, Site 2



Bull Shoals Lake: Main Channel

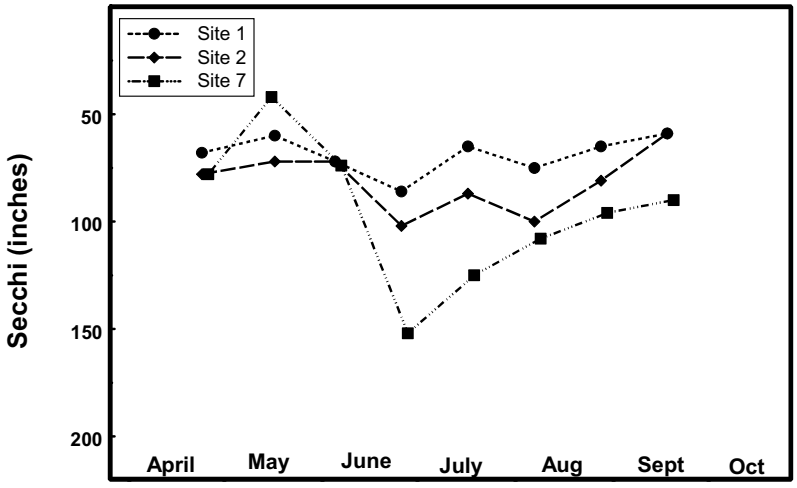
Chlorophyll concentrations in the main channel of Bull Shoals Lake

Sites 1 and 2 both had their maximum chlorophyll values in September when phosphorus concentrations also reached their peak for the season.



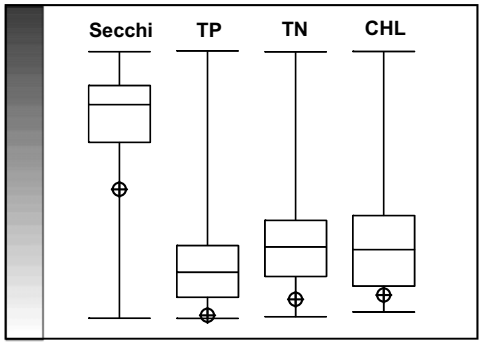
Secchi transparency values in the main channel of Bull Shoals Lake

The maximum Secchi transparency value measured at Site 7 was the second deepest observed on Bull Shoals in 2005.



All main lake sites at Bull Shoals Lake rank among the clearest 25% of Missouri lakes, and have less nutrients and chlorophyll than 75% of Missouri lakes.

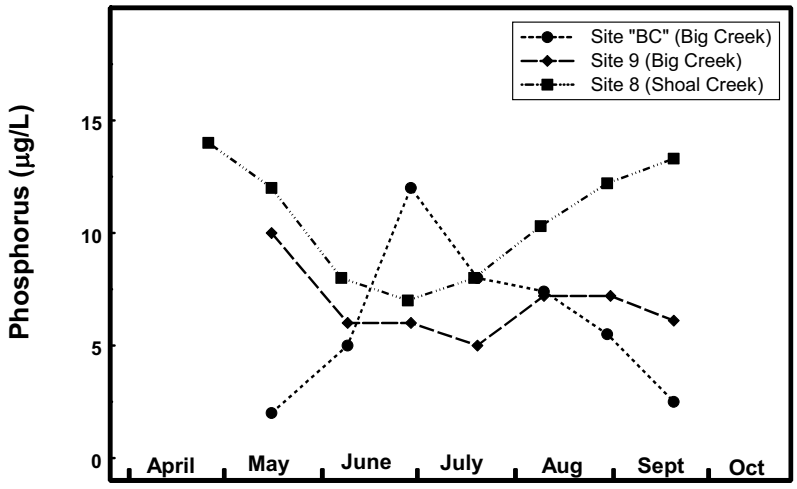
Relative Rank for
Bull Shoals Lake, Site 7



Bull Shoals Lake: Big Creek and Shoal Creek Arms

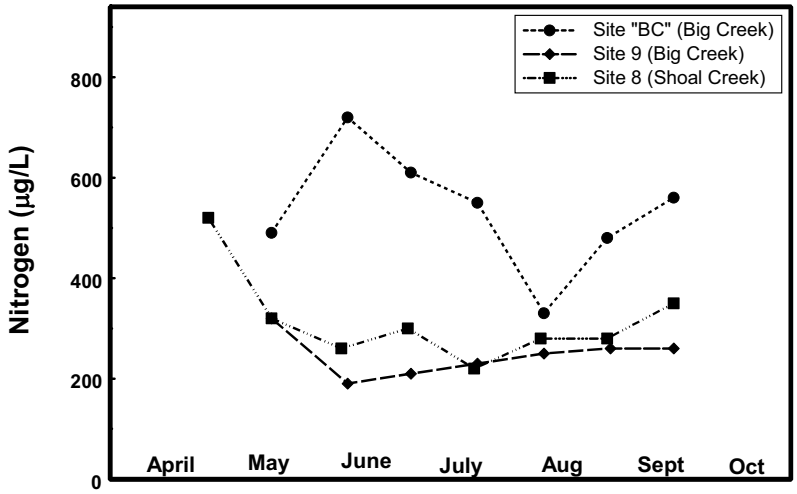
Phosphorus concentrations in the Big and Shoal Creek arms of Bull Shoals Lake

Phosphorus concentrations were similar at sites 8 and 9, diverging slightly in late August. The Big Creek site (BC) follows a different pattern entirely.

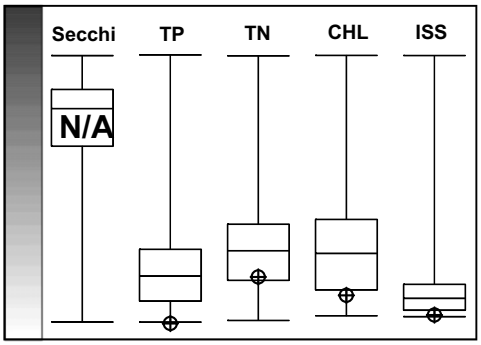


Nitrogen concentrations in the Big and Shoal Creek arms of Bull Shoals Lake

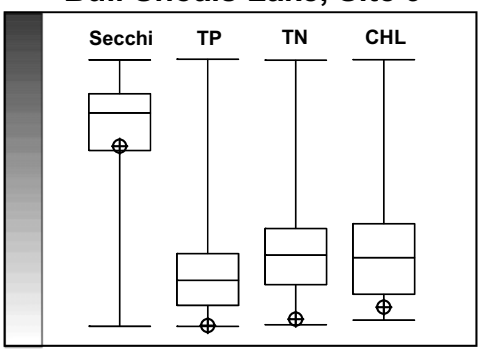
Among all Bull Shoals sites, nitrogen concentrations were highest at Site BC. This is not surprising, as this site is largely fed by groundwater.



Relative Rank for
Bull Shoals Lake, Site BC



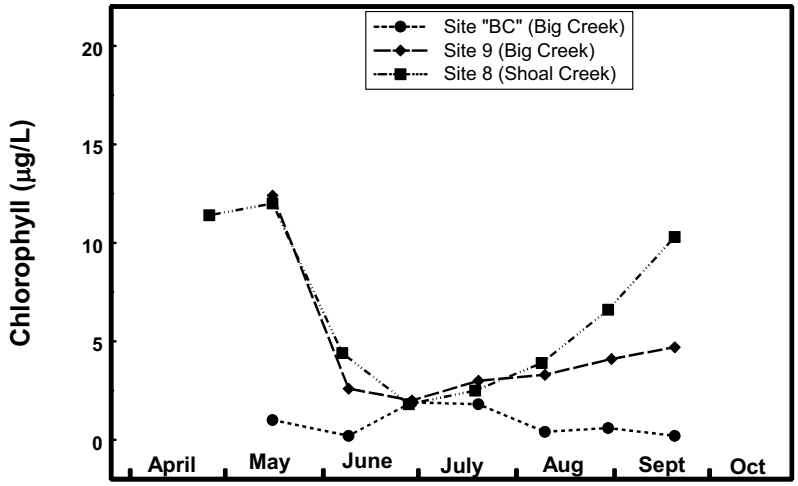
Relative Rank for
Bull Shoals Lake, Site 9



Bull Shoals Lake: Big Creek and Shoal Creek Arms

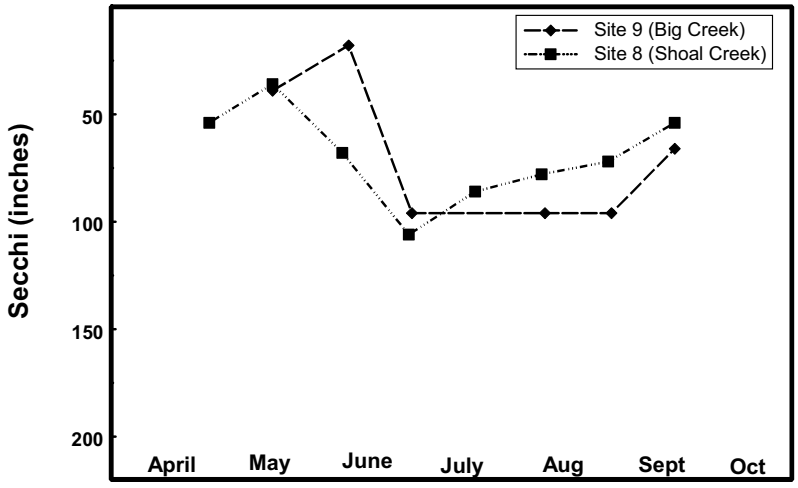
Chlorophyll concentrations in the Big and Shoal Creek arms of Bull Shoals Lake

Site BC had the lowest chlorophyll concentrations of any LMVP site. Sites 8 and 9 had very similar chlorophyll concentrations.



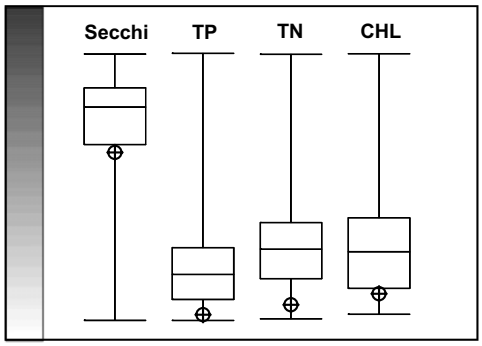
Secchi transparency values in the Big and Shoal Creek arms of Bull Shoals Lake

Secchi values at sites 8 and 9 were very similar to one another, following the same general seasonal pattern observed in chlorophyll concentrations.



The Big Creek and Shoal Creek sites have lower nutrients and chlorophyll concentrations than 75% of Missouri lakes.

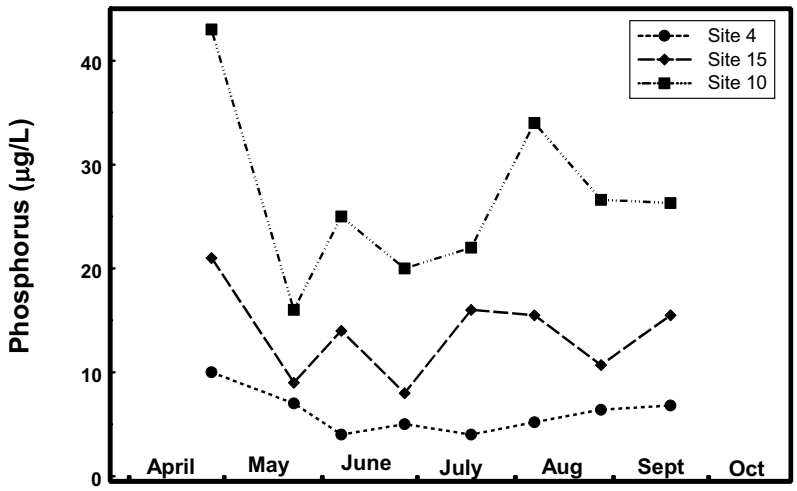
Relative Rank for
Bull Shoals Lake, Site 8



Bull Shoals Lake: Little North Fork Arm

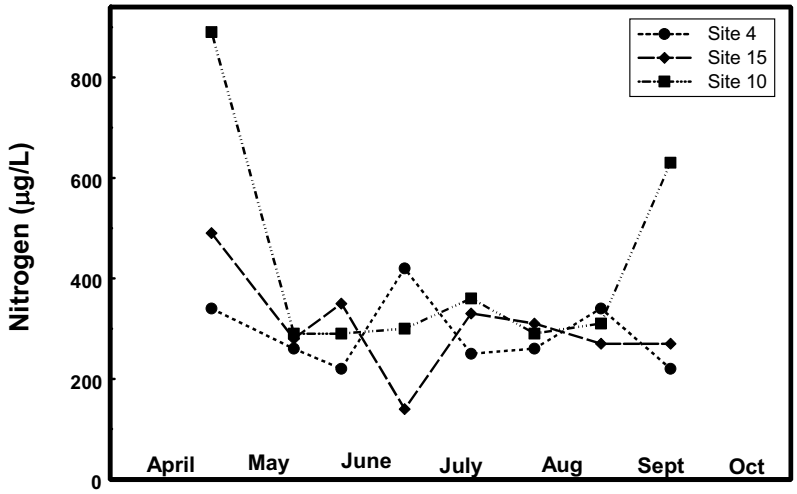
Phosphorus concentrations in the Little North Fork arm of Bull Shoals Lake

The phosphorus concentrations in the Little North Fork arm of the lake increase with distance from the main lake. This gradient is typical of reservoirs.

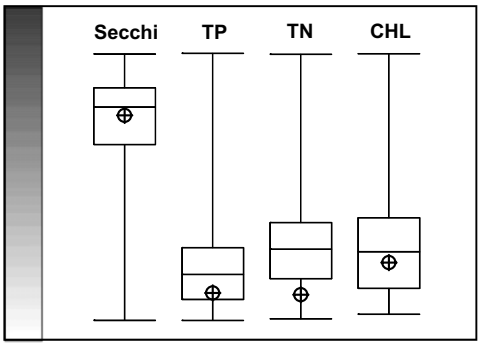


Nitrogen concentrations in the Little North Fork arm of Bull Shoals Lake

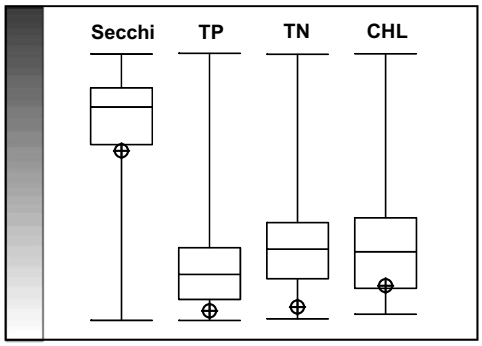
Site 10 showed high nitrogen peaks in the early and late samples of 2005. Site 15 did not show the end of summer peak, and site 4 showed neither.



Relative Rank for
Bull Shoals Lake, Site 10



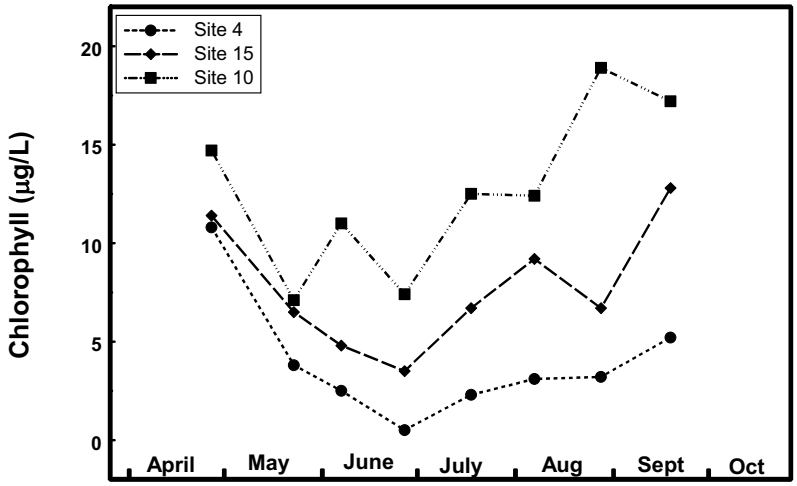
Relative Rank for
Bull Shoals Lake, Site 15



Bull Shoals Lake: Little North Fork Arm

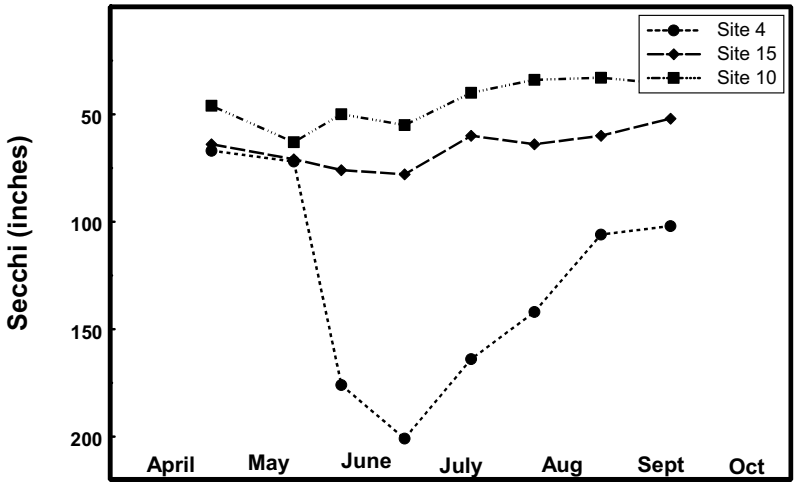
Chlorophyll concentrations in the Little North Fork arm of Bull Shoals Lake

Chlorophyll concentrations increase with distance from the main lake. Values at the three sites were similar in spring, but deviated as the sampling season progressed.



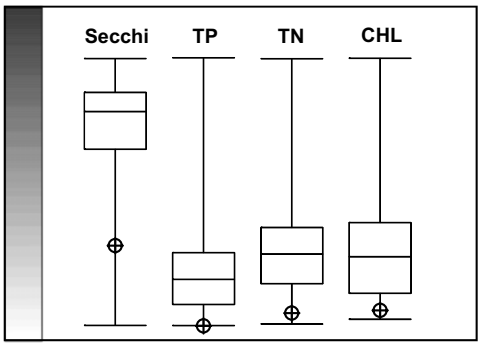
Secchi transparency values in the Little North Fork arm of Bull Shoals Lake

Secchi values closely reflect the chlorophyll concentrations in the Little North Fork arm. At low concentrations of chlorophyll, small decreases translate seemingly disproportionate increases in Secchi transparency.



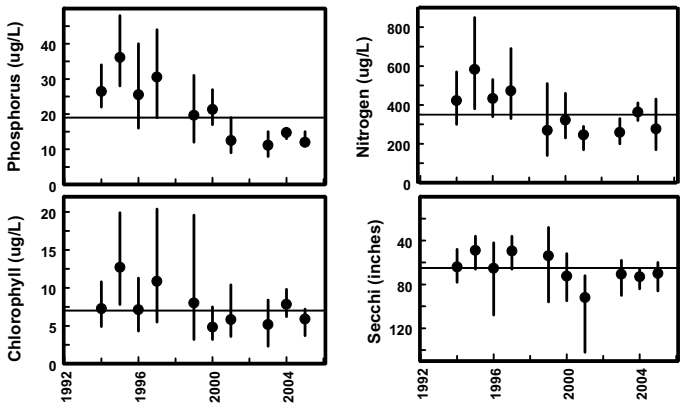
Sites 4 and 15 have among the lowest concentrations of nutrients and chlorophyll and the greatest Secchi transparency values in the state. Site 10 has the highest nutrient and chlorophyll concentrations and the lowest Secchi transparency of the monitored Bull Shoals sites. Even so, site 10 has lower nutrient and chlorophyll concentrations and greater Secchi transparency values than most lakes in the state.

Relative Rank for
Bull Shoals Lake, Site 4



Bull Shoals Lake: Trends

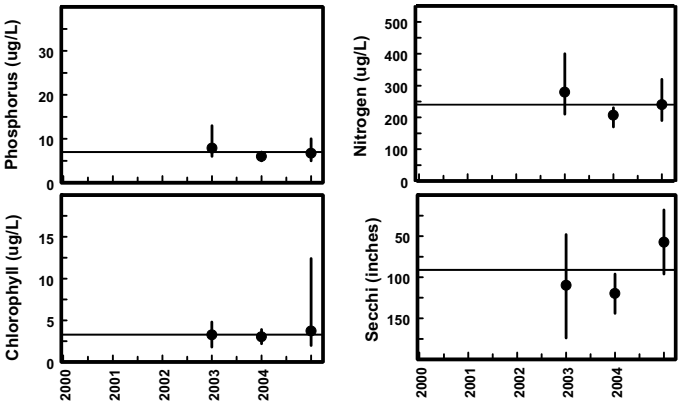
Trends at Bull Shoals Lake, Site 1



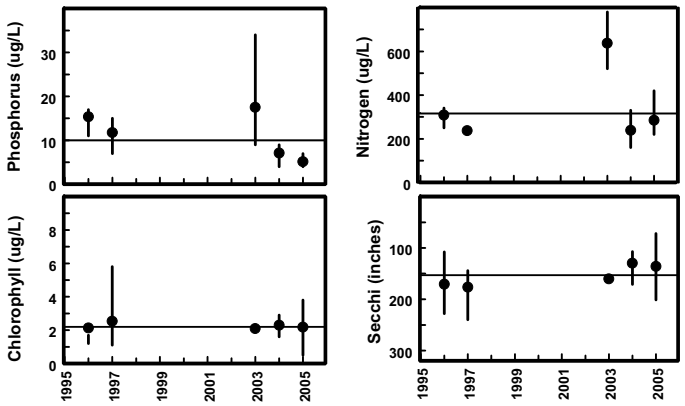
Nitrogen and phosphorus concentrations at Site 1 exhibit a trend of decreasing values. These values declined from 1995 to 2000, and have been consistently low since 2001. The Secchi values have remained virtually unchanged at about 70 inches for the last 3 years.

Trends at Bull Shoals Lake, Site 9

This is the third year for sampling at Site 9. In those three years, the summer phosphorus values have only varied by approximately 5 ug/L. Greater maximum chlorophyll values in 2005 led to a decrease in the Secchi transparency.



Trends at Bull Shoals Lake, Site 4



While the nutrient concentrations at site 4 peaked in 2003, the chlorophyll concentrations have remained remarkably consistent. Secchi has been greater than 100 inches on nearly every summer sampling occasion.