

# Lake of the Ozarks

## Ozark Highlands Region

Lake of the Ozarks is located in the Ozark Highlands, though a portion of the watershed originates in the Osage Plains Region. The Harry S. Truman Reservoir precedes this large impoundment on the Osage River. Even though the majority of the watershed is forest and grassland, the proximity of urban areas to the lake may influence water quality. Truman Reservoir also influences water quality. Past research has shown, when large volumes of water are being released from Truman scouring occurs in the old river channel. At these times, large amounts of inorganic suspended solids along with high concentrations of nutrients are brought into Lake of the Ozarks (Jones and Kaiser 1988).

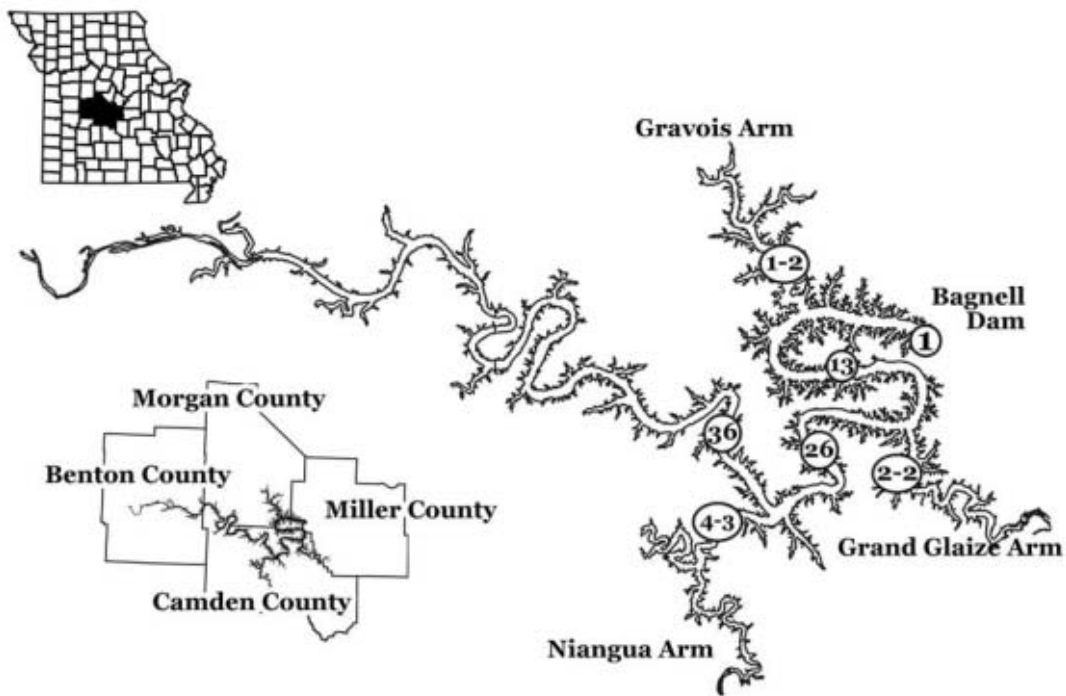


Figure 25. Location of sampling sites on Lake of the Ozarks.

Table 12. Descriptive statistics and trophic assessment for Lake of the Ozarks – 2002.

Parameters		Site	Site	Site	Site	Site
		1	4-3	13	36	C-1
Secchi (inches)	# samples	8	8	8	6	8
	geomean	69	45	67	45	60
	median	72	51	68	46	64
	minimum	27	26	41	32	38
	maximum	105	58	90	63	73
Phosphorus (µg/L)	# samples	8	8	8	6	8
	geomean	19	25	22	33	24
	median	16	28	18	36	21
	minimum	10	13	15	20	14
	maximum	54	57	49	43	47
Nitrogen (µg/L)	# samples	8	8	8	6	8
	geomean	538	557	534	548	569
	median	530	560	525	560	580
	minimum	400	480	380	420	410
	maximum	750	630	810	710	810
Chlorophyll (µg/L)	# samples	8	8	8	6	8
	geomean	11.0	16.9	10.3	15.0	13.2
	median	7.6	17.5	8.9	15.3	13.0
	minimum	4.1	9.0	4.4	11.9	7.0
	maximum	39.9	30.0	26.8	21.5	33.0
ISS (mg/L)	# samples	8	8	8	6	8
	geomean	0.1	1.3	1.0	2.5	2.0
	median	0.3	1.5	1.2	2.8	1.9
	minimum	0.0	0.2	0.2	0.9	0.8
	maximum	7.2	4.7	3.4	5.4	4.3

Trophic Assessment					
	1	4-3	13	36	C-1
Phosphorus	M	E	M	E	M
Nitrogen	E	E	E	E	E
Chlorophyll	E	E	E	E	E

M = Mesotrophic

E = Eutrophic

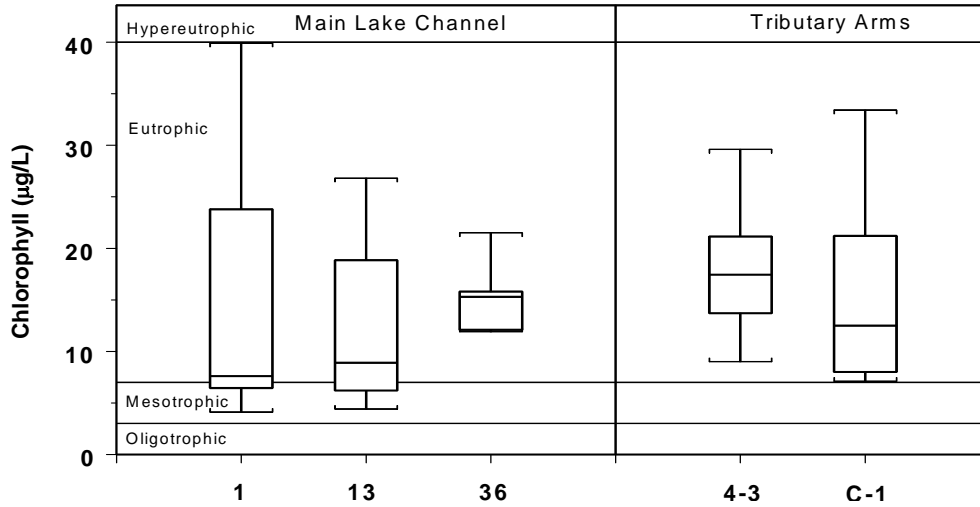


Figure 26. Box plot of chlorophyll values across Lake of the Ozarks.

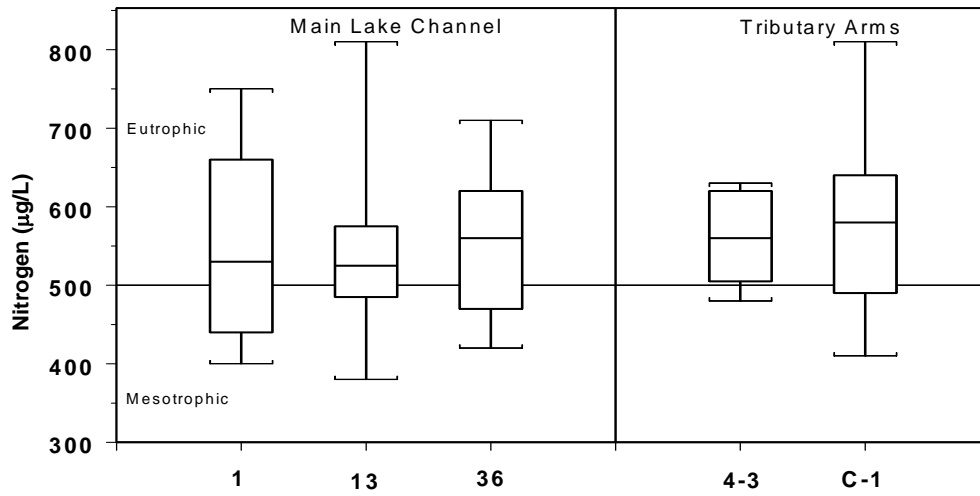


Figure 27. Box plot of nitrogen values across Lake of the Ozarks.

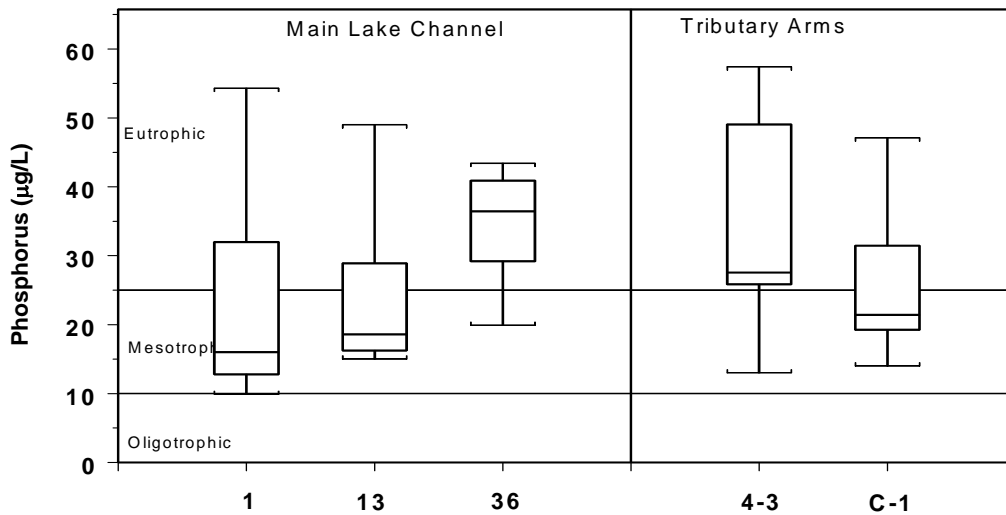


Figure 28. Box plot of phosphorus values across Lake of the Ozarks.

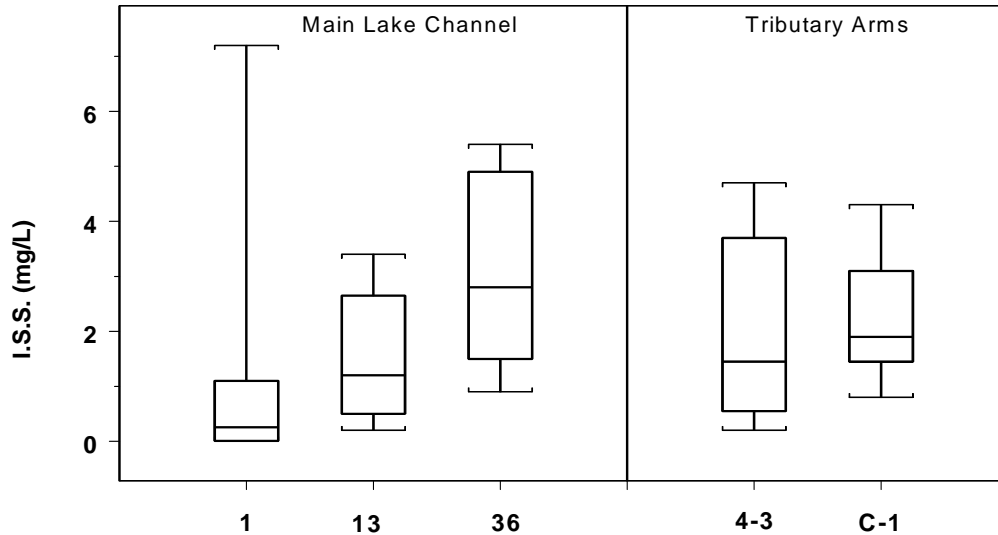


Figure 29. Box plot of inorganic suspended solids values across Lake of the Ozarks.

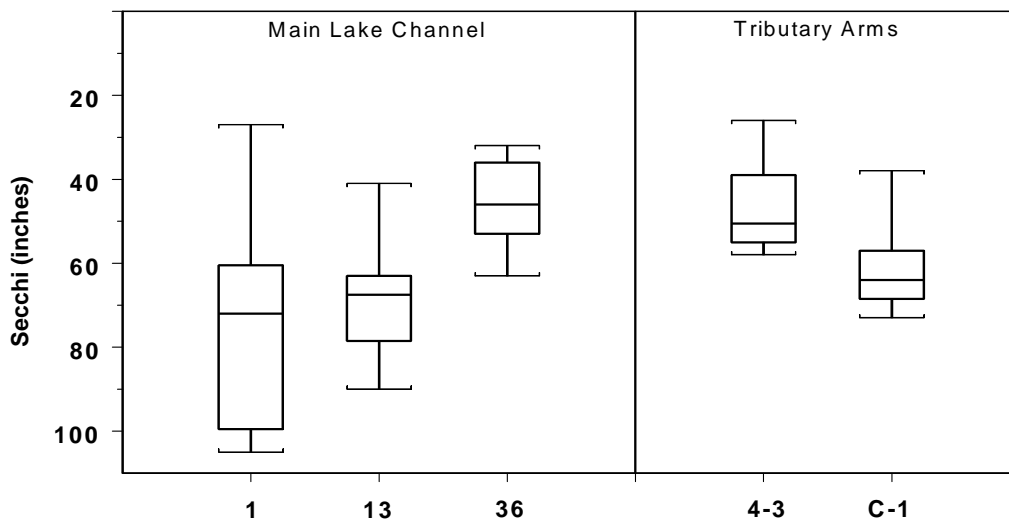


Figure 30. Box plot of Secchi values across Lake of the Ozarks.

Trends for Lake of the Ozarks (see page 18 for a description of box plots)

- Chlorophyll conditions were similar among sites, with Site 1 being the most variable.
- Median nitrogen values vary by less than 7% among sites.
- The range of 2002 values was generally greater at Site 1 (Bagnell Dam) than at other sites on the lake. This is unusual, as the dam sites of larger reservoirs are typically the most stable. See page 41 for a possible explanation.
- See the *Trends* section (pg. 83) for long-term analyses of Lake of the Ozarks data.
- Note that main lake Secchi values decrease and ISS values increase with distance from the dam.

Sample sites located near the dam on large reservoirs tend to be more stable and have lower concentrations of nutrients and sediments (see the Winter 2003 newsletter, *The Waterline*, for a more complete explanation). However, the bar graphs indicate that Lake of the Ozarks, Site 1 (Bagnell Dam) had the greatest range of values for all parameters except nitrogen in 2002. Further examination revealed that timing of sample collection was responsible.

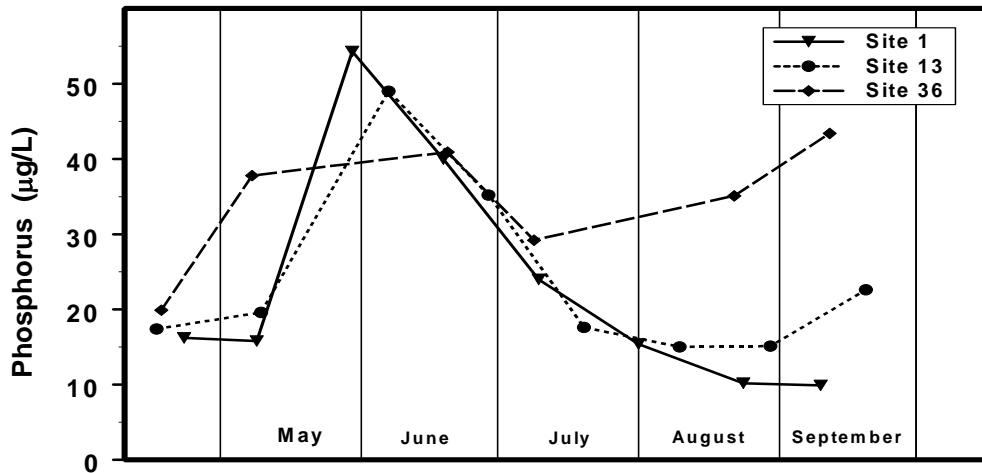


Fig. 31. Phosphorus values at 3 sites in Lake of the Ozarks

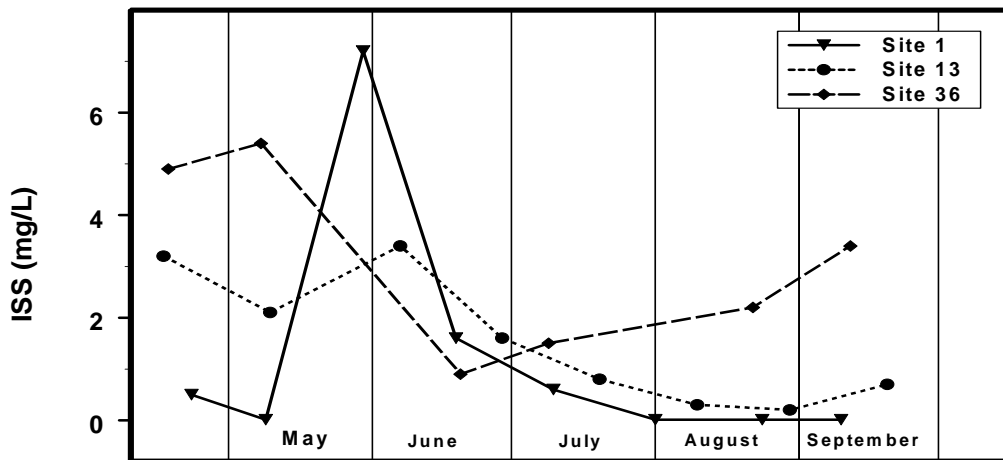


Fig. 32. ISS values at 3 sites in Lake of the Ozarks

The first sample for each site (mid/late April) shows what we would expect. ISS values are lower at the dam site and increase with distance from the dam. The second sample continues this trend, though only site 36 shows an increasing value. By the third sampling event, schedules have gotten out of synchronization. The length of time between samples collected from different sites is greater than a couple of days, therefore we lose the ability to take a “snapshot” of the lake and to directly compare the sample sites within the year. However, the geometric means generally remain unaffected, showing the strength of this statistic.