

Fishing access:

There are plenty of shore fishing opportunities around the lake, especially where the city maintains a small park. There is a boat ramp on the lake, but it is not in very good shape.

Condition of all structures (i.e. spillway, boat ramps, level regulators, etc.):

The boat ramp is in poor condition. All other structures, dam grade and spillway, are in good condition.

Field observations of aquatic vegetation condition:

Emergent vegetation consists of all types of sedges and rushes along with plenty of cattails around most of the shoreline, except for the dam grade. Reliance Lake is usually too turbid to allow for submergent vegetation growth. This year there was some growth of sago and floating leaf pondweed and maybe an occasional other species.

CHEMICAL DATA**Field observations of water quality and pollution problems:**

Reliance Lake carries a high degree of suspended solids, which may result from the feedlot on the west side of the lake. No other pollution problems were evident at the time of the survey. Water clarity was fair with a secchi disc reading of 3.0 feet. Other water quality characteristics were measured in the field on July 16, 2014, using a HACH water quality kit and a Hanna multiparameter meter. Results are found in Table 1.

Presence of a thermocline and depth from surface: No

Station for water chemistry located on attached map: Yes

Table 1. Water chemistry results from Reliance Lake, Lyman County, July 16, 2014.

Station	Depth (ft)	Temp (F)	DO (ppm)	CO2 (ppm)	ALK (mg/L)	HRD (mg/L)	pH	Cond. (µS/cm)	TDS (ppm)	Sal.	ORP	Secchi (ft)
A	Surface	76.5	7.56	21.0	168	147	8.71	372	186	0.18	-122.3	3.0
A	9.3	73.1	1.82	50.0	156	138	7.87	380	190	0.18	-139.3	

BIOLOGICAL DATA**Methods:**

Reliance Lake was sampled on July 15-17, 2014, with ten overnight trap net sets. The trap nets have 3ft x 5ft frames, 60ft leads, and ¾ inch knotted mesh. No experimental gill nets were set during this survey period. On the evening of September 28, 2014, Reliance Lake was electrofished for 60 minutes (6-ten minute transects) to sample the largemouth bass population. The boat was set up with 120 pulses per second of DC current to electrofish the lake that had a water temperature of 70°F. Fish indices and statistics were completed using Winfin.

Results and Discussion:

Trap Net Catch

Table 2. Total catch of ten, overnight ¾-inch frame nets at Reliance Lake, Lyman County, July 15-17, 2014.

Species	#	%	CPUE	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Green Sunfish	684	42.7	68.4	± 35.5	3.4	0	0	130
Golden Shiner	376	23.5	37.6	± 12.4	0.5	--	--	104
Black Bullhead	262	16.4	26.2	± 11.5	65.6	42	0	98
Bluegill	236	14.7	23.6	± 11.4	11.6	2	0	140
Largemouth Bass	44	2.7	4.4	± 1.6	0.5	0	0	128

* Thirteen year mean (1969, 1975, 1977, 1980, 1986, 1990, 1995, 1998, 2001, 2004, 2007, 2009, 2011)

Electrofishing Catch

Table 3. Total catch from six, ten-minute runs of fall nighttime electrofishing on Reliance Lake, Lyman County, September 28, 2014.

Species	#	%	CPUE	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Largemouth Bass	138	100	138.0	± 47.4	85.1	2	0	111

* Four year mean (2001, 2004, 2007, 2012)

Bluegill

The bluegill population in Reliance Dam appears to be on the increase. The CPUE of 23.6 is above the 6.1 from the 2011 survey (Table 7) as well as the 11.6 thirteen year mean (Table 2). Figures 1 and 2 illustrate the length frequency histograms for the fish sampled the last two surveys. Size structure has gotten smaller this survey but the population is establishing and the previous survey was dominated by the stocked fish. Growth is good with means right on with statewide, regional and SLI means (Table 4). Condition is great with a mean Wr of 140. This is an up and coming bluegill population that appears to be getting really established after the winterkill.

Table 4. Average back-calculated lengths (mm) for each age class of bluegill sampled from Reliance Lake, Lyman County, 2014.

Year Class	Age	N	Back-calculated Age		
			1	2	3
2013	1	84	63		
2012	2	14	60	101	
2011	3	1	41	124	157
All Classes		99	55	112	157
Statewide Mean			55	103	141
Region II Mean			52	97	134
SLI* Mean			53	101	138

* Small Lakes and Impoundments

Figure 1. Length frequency histogram for bluegill sampled from Reliance Lake, Lyman County, 2014.

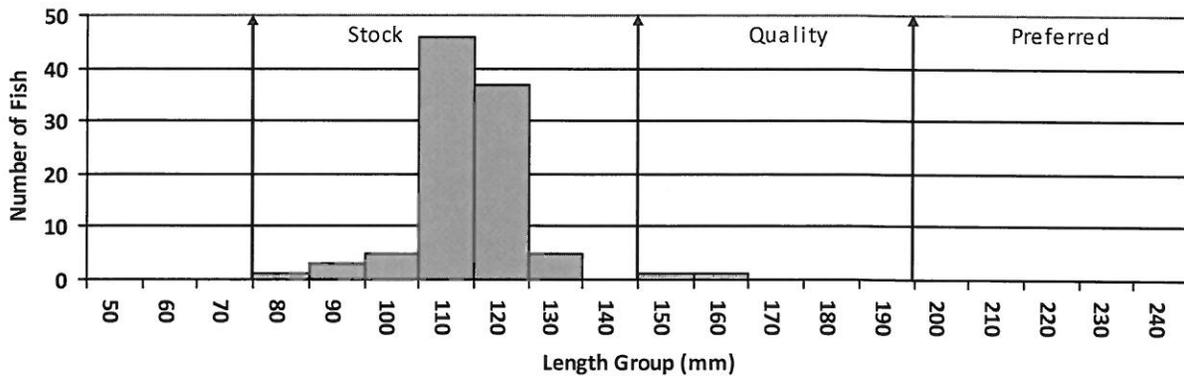
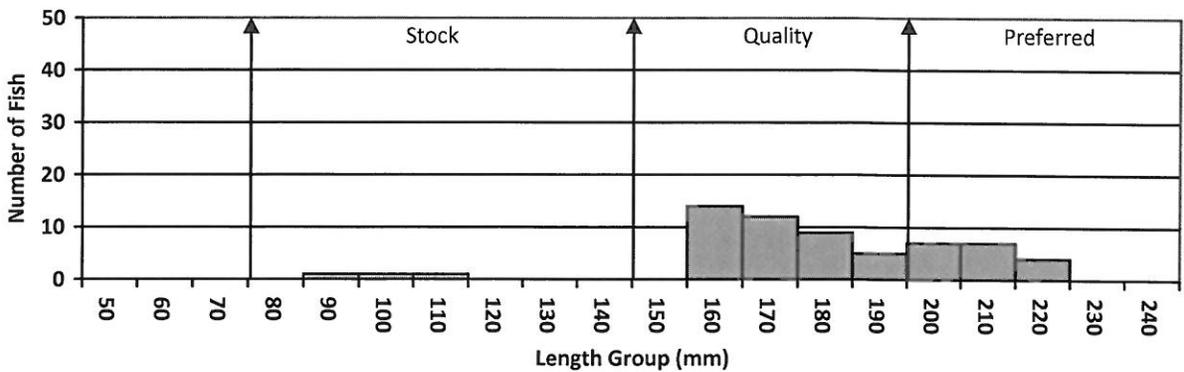


Figure 2. Length frequency histogram for bluegill sampled from Reliance Lake, Lyman County, 2011.



Largemouth Bass

Reliance Lake continues to build a largemouth bass population. The fall electrofishing CPUE of 138.0 fish per hour is below the 154.8 from the 2012 survey (Table 7) but is still well above the 85.1 four year mean (Table 3). Figures 3 and 4 illustrate the length frequency histograms for the fish sampled over the last two surveys. The length groups in Figure 4 show a much more balanced population, but may have been slightly influenced by the stockings that had taken place prior to this survey. The population now appears to be dominated by mainly one year class and growth of those fish is fine with the mean just slightly below the statewide, regional and SLI mean (Table 5). Condition is good with a mean W_r of 111.

Table 5. Average back-calculated lengths (mm) for each age class of largemouth bass sampled from Reliance Lake, Lyman County, 2014.

Year Class	Age	N	Back-calculated Age
2013	1	138	87
All Classes		138	87
Statewide Mean			96
Region II Mean			105
SLI* Mean			99

* Small Lakes and Impoundments

Figure 3. Length frequency histogram for largemouth bass sampled from Reliance Lake, Lyman County, 2014.

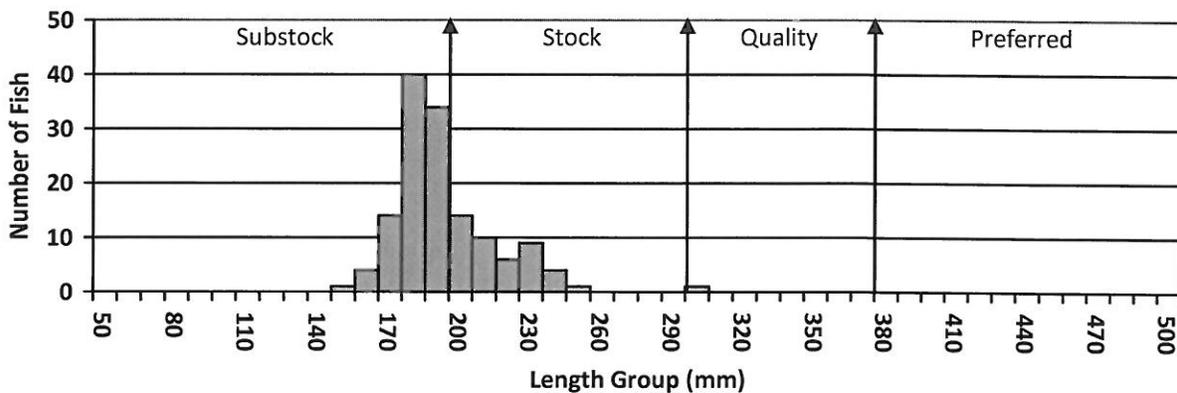
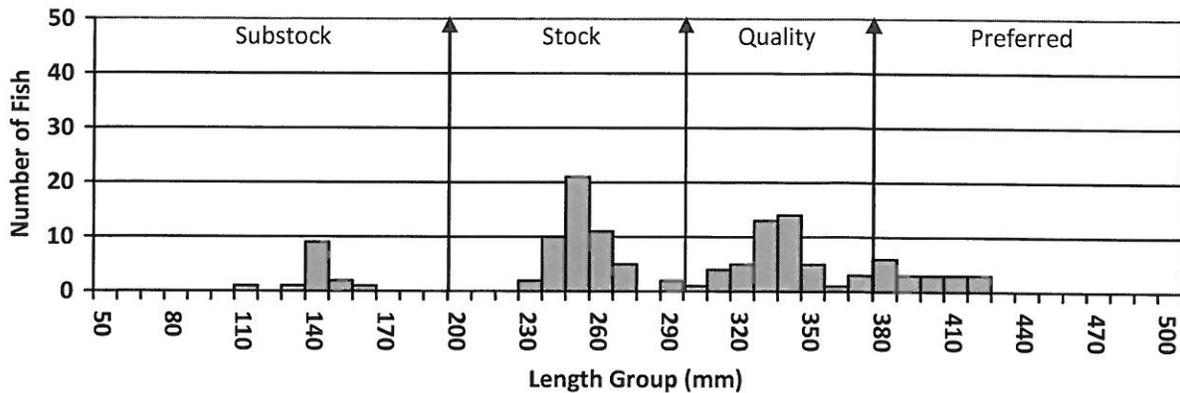


Figure 4. Length frequency histogram for largemouth bass sampled from Reliance Lake, Lyman County, 2012.



Black Bullhead

The black bullhead population in Reliance Dam has decreased dramatically of the previous survey. The CPUE of 26.2 is well below the 546.1 from the 2011 survey (Table 7) as well as the 65.6 thirteen year mean (Table 2). Figures 5 and 6 illustrate the length frequency histograms for the fish sampled over the past two surveys. Both years the populations are dominated by small fish. The good thing this survey is that some of the fish appear to be getting some size on them, which is a factor of a large reduction in the CPUE. Condition is good with a mean Wr of 98.

Figure 5. Length frequency histogram for black bullhead sampled from Reliance Lake, Lyman County, 2014.

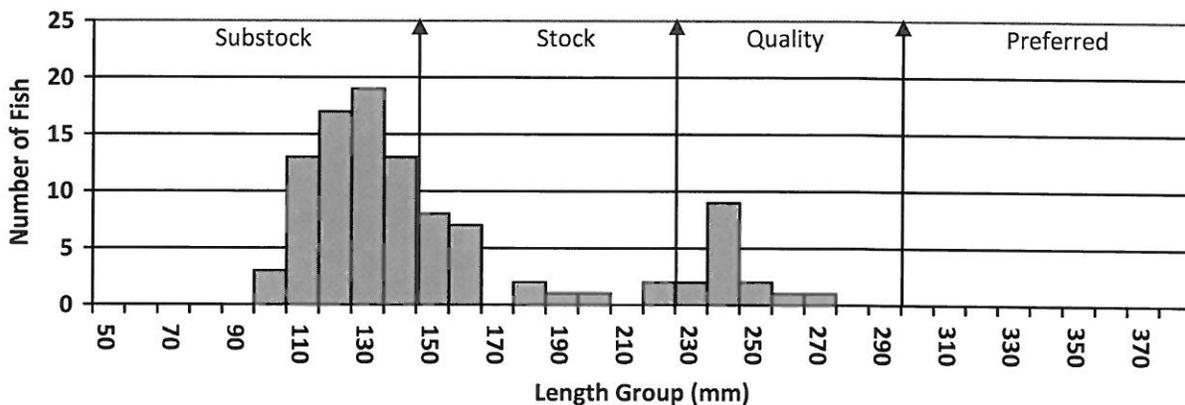
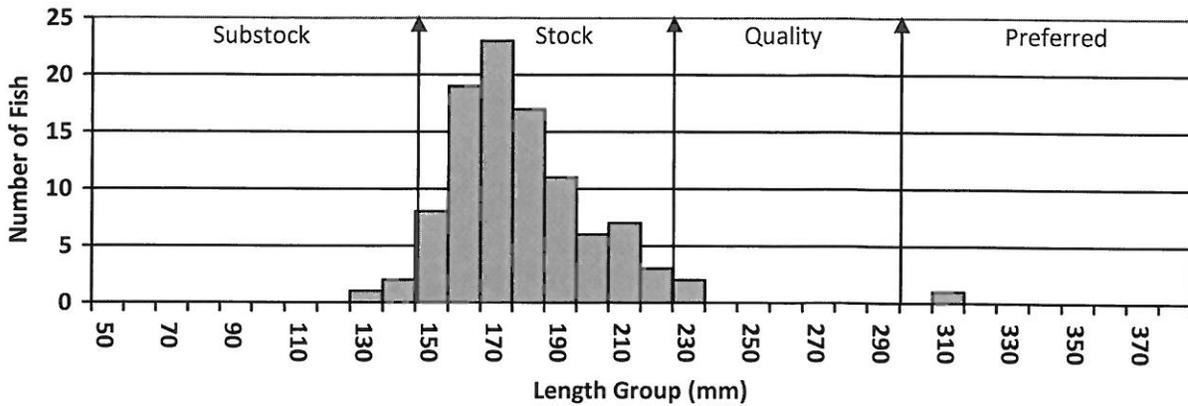


Figure 6. Length frequency histogram for black bullhead sampled from Reliance Lake, Lyman County, 2011.



Other Species

Green sunfish and golden shiner were the only other species sampled this survey. Yellow perch, northern pike, channel catfish, orangespotted sunfish, pumpkinseed sunfish, and hybrid sunfish were the species not sampled this survey that had been in years past (Table 7).

Green sunfish were the dominant species sampled this survey. The CPUE of 68.4 is well above the 43.1 from the 2011 survey (Table 7) as well as the 3.4 thirteen year mean (Table 2). Figures 7 and 8 illustrate the length frequency histograms for the fish sampled the past two surveys. Size is on the small side and would not be of a size anglers would target to harvest. They would make for fun angling for kids. Condition is good with a mean Wr of 130.

Golden shiners were the next dominant species sampled this survey. The CPUE of 37.6 is well above the 0.6 from the 2011 survey (Table 7) as well as the 0.5 thirteen year mean (Table 2). Figure 9 illustrates the length frequency histogram for the fish sampled this survey. Condition is good with a mean Wr of 104.

Figure 7. Length frequency histogram for green sunfish sampled from Reliance Lake, Lyman County, 2014.

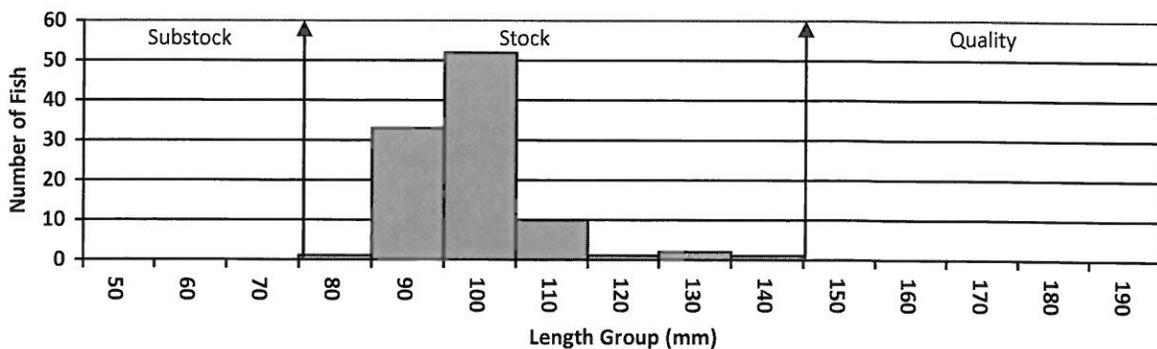


Figure 8. Length frequency histogram for green sunfish sampled from Reliance Lake, Lyman County, 2011.

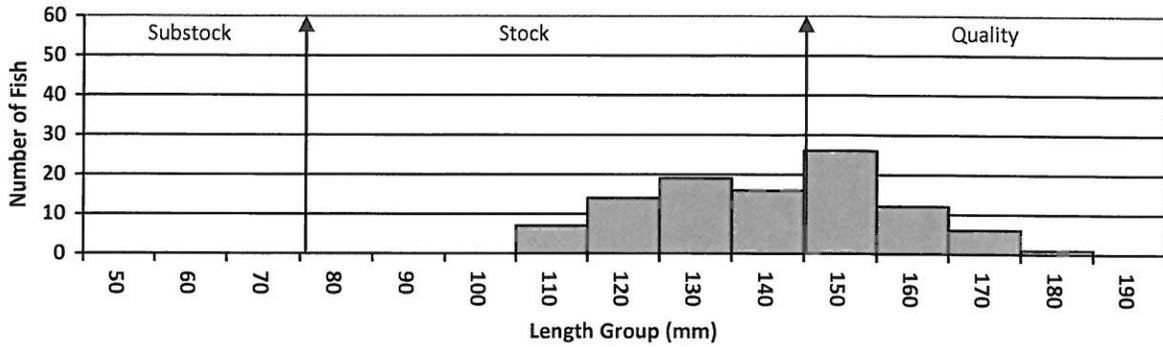


Figure 9. Length frequency histogram for golden shiner sampled from Reliance Lake, Lyman County, 2014.

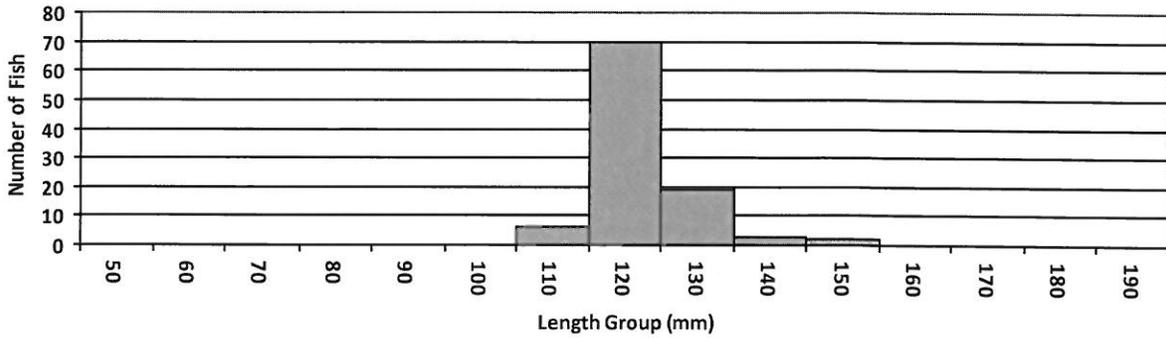


Table 6. Stocking records from the recent winterkill in 2008/09 till the present for Reliance Dam, Lyman County.

Year	Number	Species	Size
2009	4,200	Largemouth Bass	Fingerling
2010	300	Bluegill	Adult
2010	4,180	Largemouth Bass	Fingerling
2010	150	Largemouth Bass	Juvenile
2012	100	Largemouth Bass	Juvenile

RECOMMENDATIONS

1. Resurvey in 2017 to monitor the fish population.
2. Stock bluegill and yellow perch to supplement the fish populations.
3. Stock channel catfish to replenish the fish population.
4. Continue to stock largemouth bass to supplement the population.

Table 7. Gill net (GN), trap net (TN), and electrofishing (EF) CPUE for all fish species sampled in Reliance Lake, Lyman County since survey records started in 1969.

Species	1969	1975	1977	1980	1986	1990	1995	1998	2001	2004	2007	2009	2011	2012	2014
BLB (GN)	4.0	6.0	--	30.0	--	--	--	--	--	--	--	--	--	--	--
BLB (TN)	93.8	9.0	48.7	90.4	22.4	5.4	8.9	7.8	11.3	1.7	--	7.4	546.1	--	26.2
YEP (GN)	6.0	14.0	0.5	7.0	--	--	--	--	--	--	--	--	--	--	--
YEP (TN)	0.7	1.0	0.6	0.5	0.3	1.1	1.9	0.4	1.5	0.2	1.6	--	--	--	--
LMB (EF)	--	--	--	--	--	--	--	--	46.5	57.0	82.0	--	--	154.8	138.0
LMB (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
LMB (TN)	1.7	--	0.4	--	0.1	0.8	1.5	0.9	0.6	0.2	0.2	--	0.1	--	4.4
NOP (GN)	--	3.0	4.5	8.0	--	--	--	--	--	--	--	--	--	--	--
NOP (TN)	0.2	1.6	1.9	3.3	1.3	0.9	0.8	0.4	0.4	2.5	1.5	--	--	--	--
CCF (GN)	--	--	--	1.0	--	--	--	--	--	--	--	--	--	--	--
CCF (TN)	--	--	--	--	--	13.0	0.6	0.8	3.1	5.8	2.1	--	--	--	--
BLG (GN)	1.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BLG (TN)	27.3	20.4	4.5	14.5	2.5	0.1	22.3	16.0	21.0	6.3	10.1	--	6.1	--	23.6
GSF (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GSF (TN)	0.2	0.1	0.1	--	0.1	--	0.5	0.1	--	--	0.1	--	43.1	--	68.4
OSF (GN)	2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--
OSF (TN)	0.5	--	--	--	--	0.8	--	--	--	--	--	--	--	--	--
PUS (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PUS (TN)	1.1	--	--	--	--	0.5	--	--	--	--	--	--	--	--	--
HYB (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HYB (TN)	1.6	--	--	--	--	--	--	0.5	1.8	0.1	0.1	--	--	--	--
GOS (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GOS (TN)	--	--	--	--	--	--	--	--	0.5	0.5	0.2	4.2	0.6	--	37.6

BLB – Black Bullhead, YEP – Yellow Perch, LMB – Largemouth Bass, NOP – Northern Pike, CCF – Channel Catfish, BLG – Bluegill, GSF – Green Sunfish, OSF – Orangespotted Sunfish, PUS – Pumpkinseed Sunfish, HYB – Hybrid Sunfish, GOS – Golden Shiner