



**Fishing access:**

The northeast corner of the lake contains a boat ramp for water access. There is also an access easement to allow shore fishing around the entire lake. Shore fishing may be limited in some areas by the aquatic vegetation. Burke Lake also has a handicapped accessible fishing pier.

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

The dam grade and spillway are in good condition. The concrete plank boat ramp is in good condition and provides ample boat launching facilities for Burke Lake.

**Field observations of aquatic vegetation condition:**

Emergent vegetation is present along the entire shoreline and consists of 40% bulrush and 60% cattails. Submergent vegetation surrounds the entire shoreline to depths of around 6 feet and consists of a mixture of pondweed species. Heavy algae blooms and duckweed are common in Burke Lake due to the heavy nutrient loads from the feedlot.

**CHEMICAL DATA**

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

Burke Lake has had a history of high nutrient levels attributed from runoff from a feedlot located on the watershed adjacent to the lake. The feedlot was relocated following the 1992-93 lake dredging project, however cattle were once again being fed on the tract of land adjacent to the lake during the spring of 1996. This coupled with a partial fish kill in early 1996 has renewed pollution concerns. The water color was a pea green at the time of the fall electrofishing survey. Water clarity during the summer survey was good with a secchi disc reading of only 4.0 feet. Other water quality characteristics were measured in the field on June 23, 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 Burke Lake, Gregory County, June 23, 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	78.4	8.35	17.6	188	162	8.71	324	162	0.15	-98.1	4.0
A	16.0	67.9	2.20	38.6	220	414	7.60	421	210	0.20	-127.9	

## BIOLOGICAL DATA

### Methods:

Burke Lake was sampled on June 23-25, 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 October 7, 2014, Burke Lake was electrofished for 50 minutes (5-ten minute transects) to sample the largemouth bass population. The boat was set up with 120 pulses per second of DC current at 340 volts with around 12 amps to electrofish the lake that had a conductivity of 311µS/cm with a water temperature of 56.9°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 Burke Lake, Gregory County, June 23-25, 2014.

Species	#	%	CPUE	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Black Crappie	76	40.6	7.6	± 5.4	31.7	72	8	108
Bluegill	76	40.6	7.6	± 4.0	28.2	62	12	112
Yellow Perch	24	12.9	2.4	± 2.0	1.9	60	0	102
Black Bullhead	8	4.3	0.8	± 0.5	11.8	100	100	89
Northern Pike	2	1.1	0.2	± 0.2	1.4	--	--	94
Green Sunfish	1	0.5	0.1	± 0.1	0.5	--	--	117

\* Twelve year mean (1975, 1979, 1982, 1985, 1989, 1993, 1996, 1999, 2002, 2005, 2008, 2011)

#### Electrofishing Catch

**Table 3.** Total catch from five ten-minute runs of fall nighttime electrofishing on Burke Lake, Gregory County, October 7, 2014.

Species	#	%	CPUE	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Largemouth Bass	63	100	75.6	± 9.5	58.4	87	60	116

\* Four year mean (2002, 2005, 2008, 2011)

#### Largemouth Bass

Burke Lake continues to contain a very good largemouth bass population. The electrofishing CPUE of 75.6 bass per hour is right on with the 76 from the 2011 survey (Table 9), but is above the 58.4 four year mean (Table 3). The population continues to be pretty balanced with a PSD of 87 with an RSD-P of 60. There is also a good number of young with being produced that are not yet figured into these calculations. Figures 1 through 5 illustrate the length frequency histograms for the last five surveys. The oldest couple show that the population was low but has built up

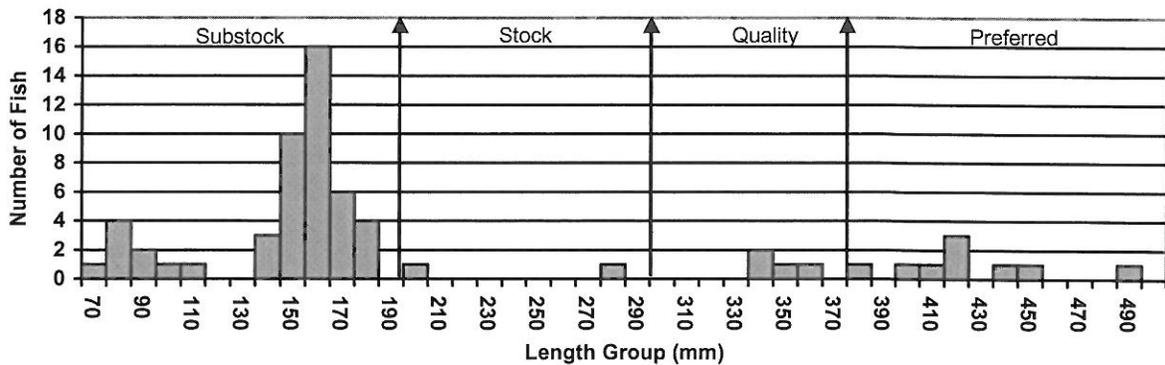
over the years into a very nice population. Condition is good with a mean Wr of 116. Growth is also good with means right on with statewide, regional and SLI means (Table 4).

**Table 4.** Average back-calculated lengths (mm) for each age class of largemouth bass in Burke Lake, Gregory County, 2014.

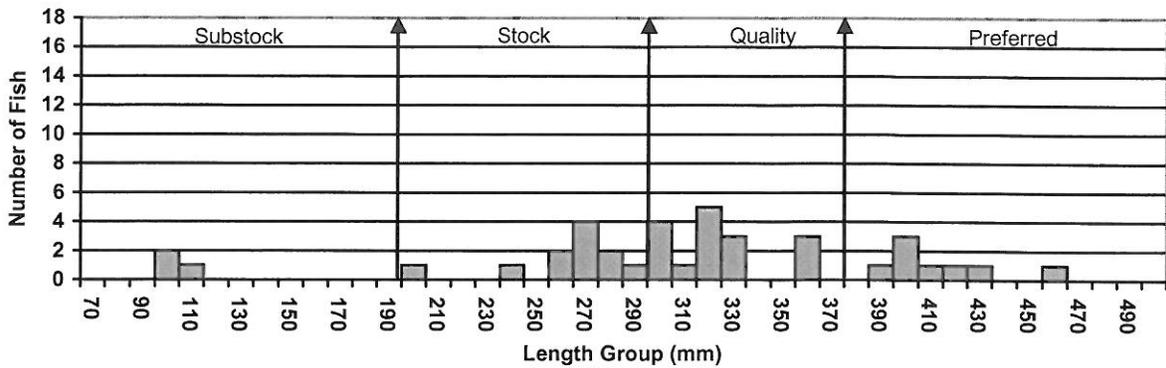
Year Class	Age	N	Back-calculated Age														
			1	2	3	4	5	6	7	8	9	10	11	12	13		
2014	0	8															
2013	1	40	93														
2012	2	1	115	190													
2011	3	4	87	149	270												
2010	4	1	107	206	275	343											
2009	5	3	101	171	265	307	367										
2008	6	2	86	167	208	299	352	408									
2007	7	1	71	116	175	223	313	353	402								
2005	9	1	83	187	240	279	302	323	364	388	410						
2001	13	1	104	191	255	284	310	349	375	405	419	426	435	453	474		
<b>All Classes</b>		<b>62</b>	<b>94</b>	<b>172</b>	<b>241</b>	<b>289</b>	<b>329</b>	<b>358</b>	<b>380</b>	<b>396</b>	<b>414</b>	<b>426</b>	<b>435</b>	<b>453</b>	<b>474</b>		
Statewide Mean			96	182	250	305	342										
Region II Mean			105	183	246	296	328										
SLI* Mean			99	183	246	299	332										

\* Small Lakes and Impoundments

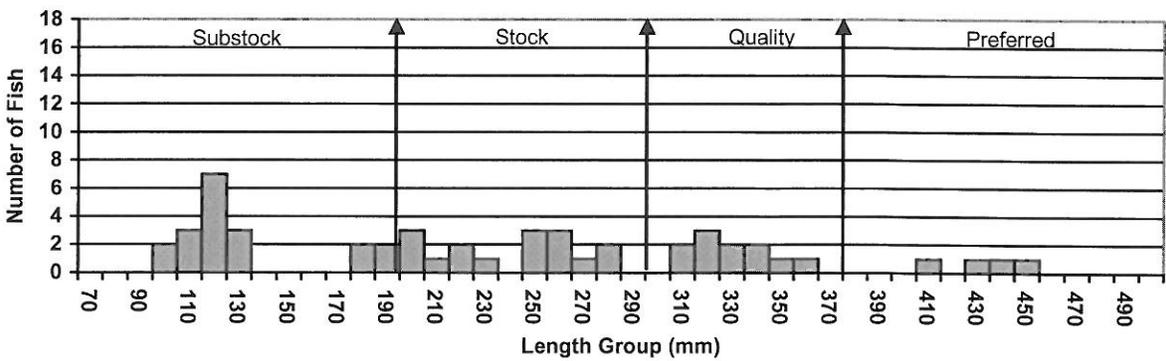
**Figure 1.** Length frequency histogram for largemouth bass sampled by fall electrofishing from Burke Lake, Gregory County, 2014.



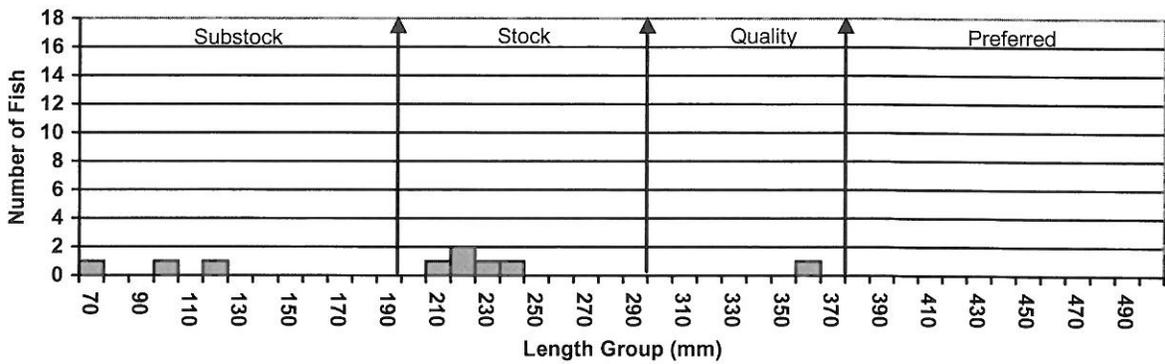
**Figure 2.** Length frequency histogram for largemouth bass sampled by fall electrofishing from Burke Lake, Gregory County, 2011.



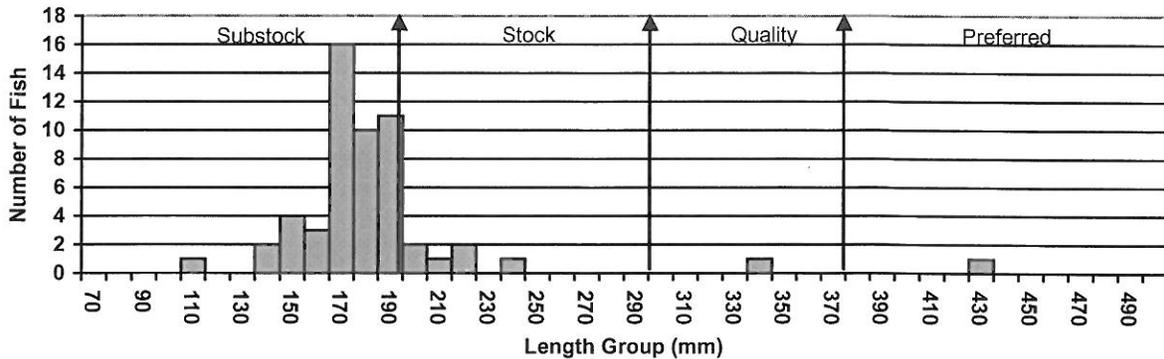
**Figure 3.** Length frequency histogram for largemouth bass sampled by fall electrofishing from Burke Lake, Gregory County, 2008.



**Figure 4.** Length frequency histogram for largemouth bass sampled by fall electrofishing from Burke Lake, Gregory County, 2005.



**Figure 5.** Length frequency histogram for largemouth bass sampled by fall electrofishing from Burke Lake, Gregory County, 2002.



### Black Crappie

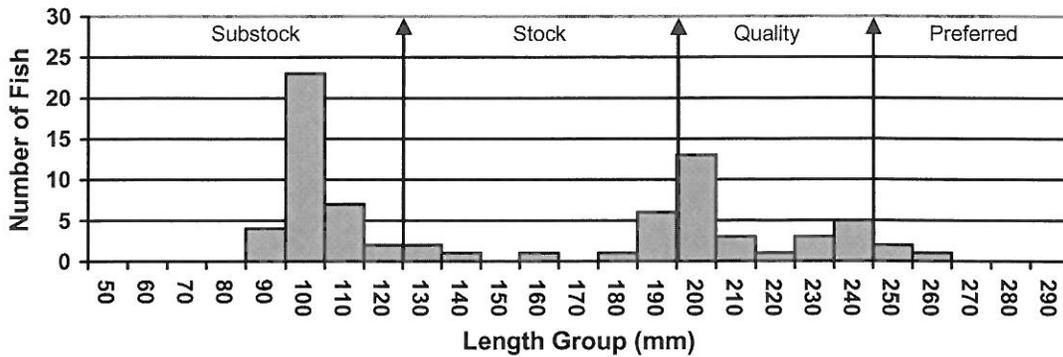
Burke Lake continues to contain a good black crappie population. The CPUE of 7.6 is below the 13.6 from the 2011 survey (Table 9) as well as the 31.7 twelve year mean (Table 2). The population appears to be on a slight decline this year but should rebound quickly as a good number of young fish are moving into the population. Figures 6 through 11 illustrate the length frequency histograms for the fish sampled over the last six surveys. The cyclic pattern has occurred in other surveys as well. The PSD of 70 with an RSD-P of 8 also illustrates a population that is dominated by young fish. Growth is fine with means right around statewide, regional and SLI means (Table 5). Condition is good with a mean Wr of 108.

**Table 5.** Average back-calculated lengths (mm) for each age class of black crappie in Burke Lake, Gregory County, 2014.

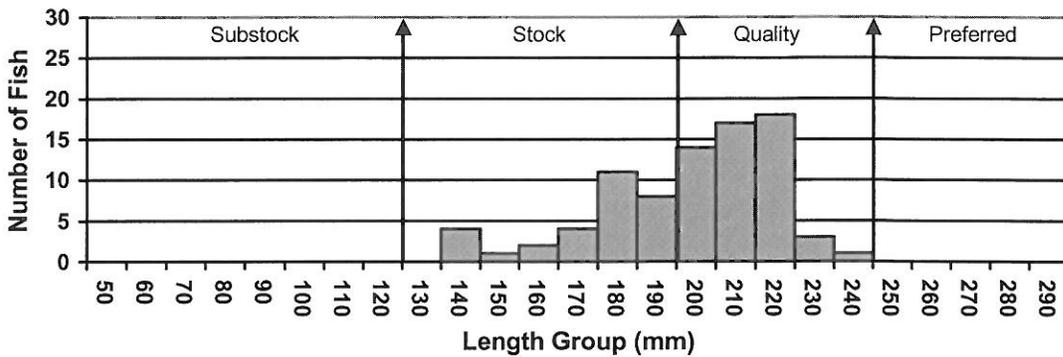
Year Class	Age	N	Back-calculated Age						
			1	2	3	4	5	6	
2013	1	39	90						
2012	2	1	70	134					
2011	3	23	68	128	188				
2010	4	6	84	143	192	234			
2009	5	5	87	144	184	214	245		
2008	6	1	85	145	174	198	205	235	
<b>All Classes</b>		<b>75</b>	<b>81</b>	<b>139</b>	<b>185</b>	<b>215</b>	<b>225</b>	<b>225</b>	<b>235</b>
Statewide Mean			83	147	195	229	249		
Region II Mean			75	132	177	209	235		
SLI* Mean			78	134	180	209	226		

\* Small Lakes and Impoundments

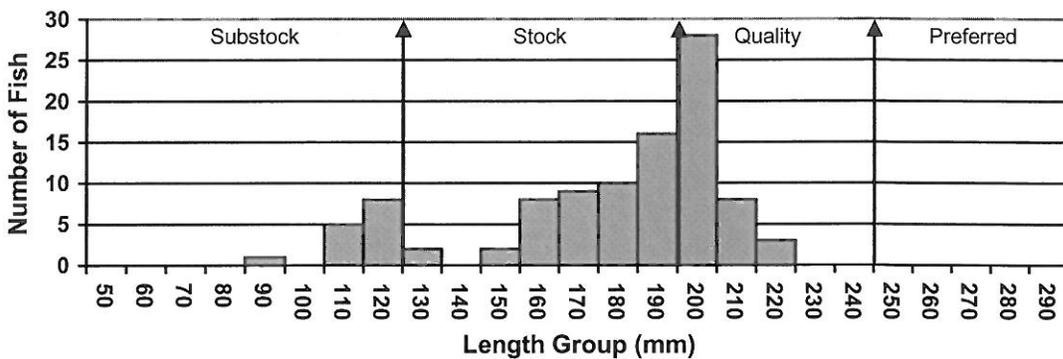
**Figure 6.** Length frequency histogram for black crappie sampled from Burke Lake, Gregory County, 2014.



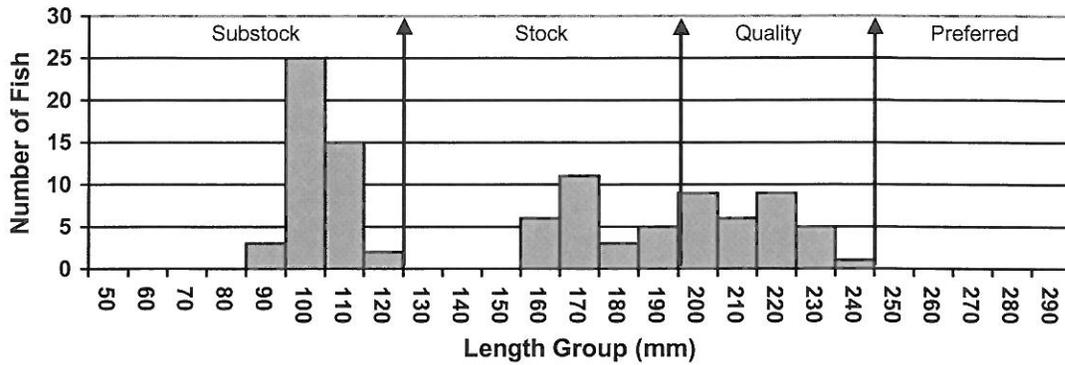
**Figure 7.** Length frequency histogram for black crappie sampled from Burke Lake, Gregory County, 2011.



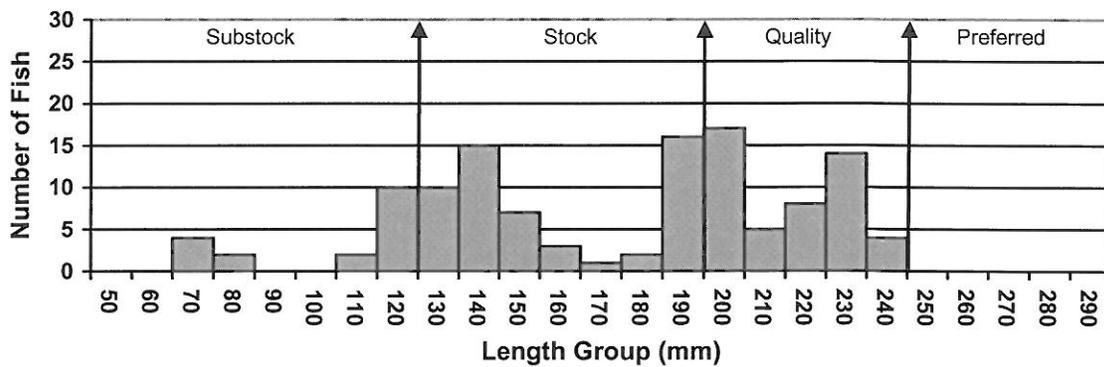
**Figure 8.** Length frequency histogram for black crappie sampled from Burke Lake, Gregory County, 2008.



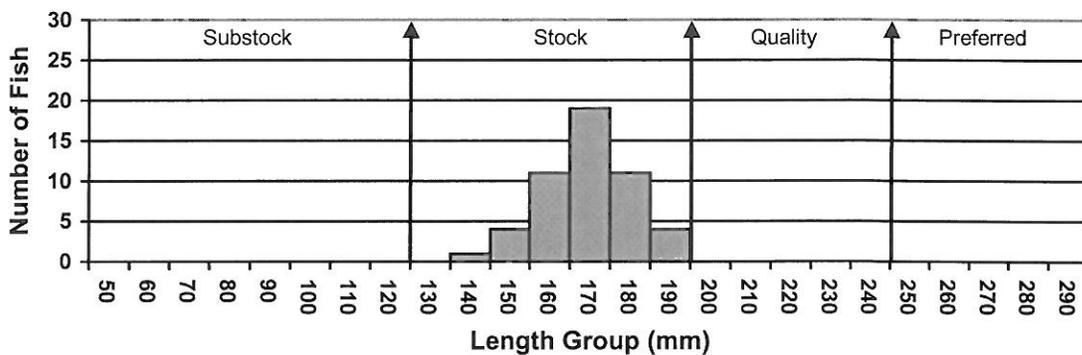
**Figure 9.** Length frequency histogram for black crappie sampled from Burke Lake, Gregory County, 2005.



**Figure 10.** Length frequency histogram for black crappie sampled from Burke Lake, Gregory County, 2002.



**Figure 11.** Length frequency histogram for black crappie sampled from Burke Lake, Gregory County, 1999.



## Bluegill

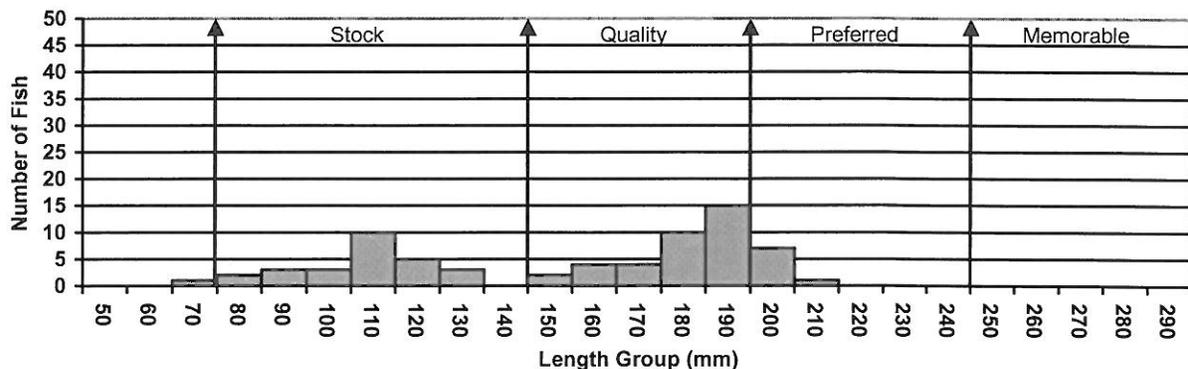
Bluegills in Burke Lake have dropped from the dominant panfish species sampled. The CPUE of 7.6 is well below the 41.9 from the 2011 survey (Table 9) as well as the 28.2 twelve year mean (Table 2). Figures 12 through 17 illustrate the length frequency histograms for the fish sampled from the last six surveys. Not a lot has ever changed in these figures as sizes go; the only real change is the density. Growth rates are good with means right around statewide, regional and SLI means (Table 6). Condition is also good with a mean Wr of 112. Angling pressure might be the reason that no survey ever shows fish out of the preferred category.

**Table 6.** Average back-calculated lengths (mm) for each age class of bluegill sampled in Burke Lake, Gregory County, 2014.

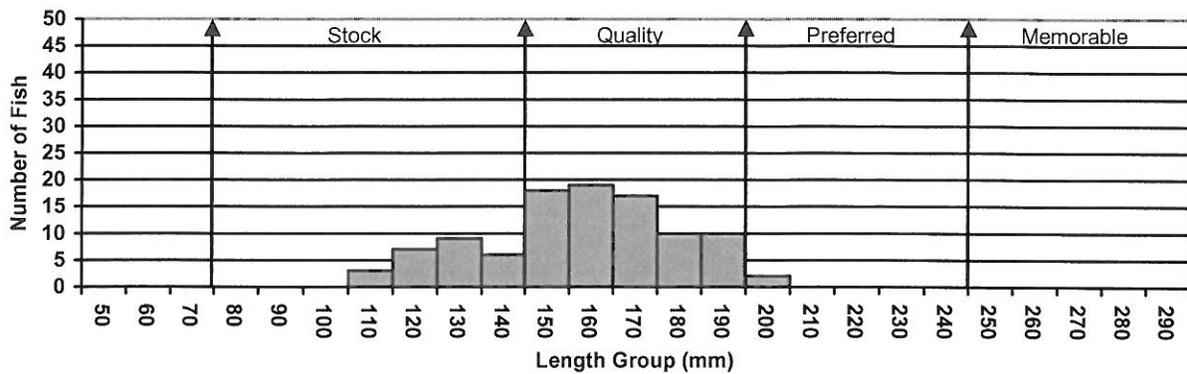
Year Class	Age	N	Back-calculated Age							
			1	2	3	4	5	6	7	
2013	1	1	56							
2012	2	20	39	89						
2011	3	14	43	75	124					
2010	4	5	46	93	124	177				
2009	5	13	43	82	120	153	186			
2008	6	13	41	79	114	141	158	187		
2007	7	3	37	83	125	144	163	182	198	
<b>All Classes</b>		<b>69</b>	<b>44</b>	<b>84</b>	<b>121</b>	<b>154</b>	<b>169</b>	<b>185</b>	<b>198</b>	
Statewide Mean			55	103	141	166	180			
Region II Mean			52	97	134	164	180			
SLI* Mean			53	101	138	163	180			

\* Small Lakes and Impoundments

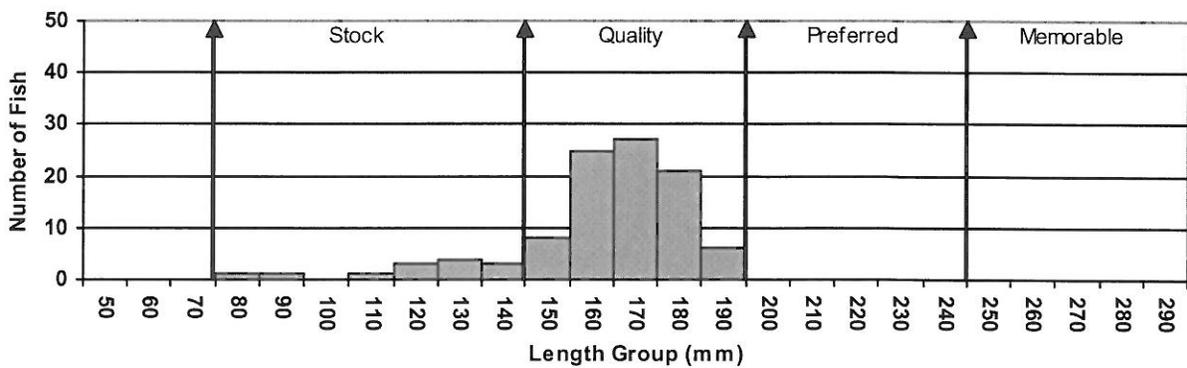
**Figure 12.** Length frequency histogram for bluegill sampled from Burke Lake, Gregory County, 2014.



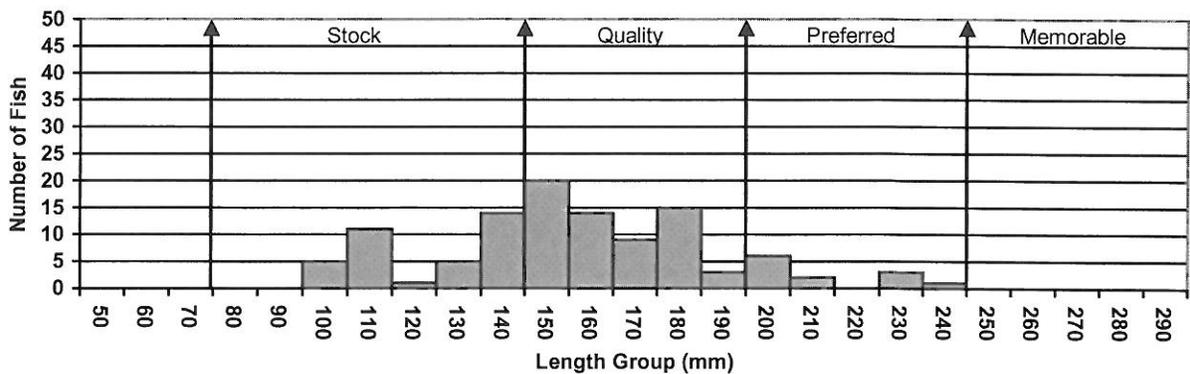
**Figure 13.** Length frequency histogram for bluegill sampled from Burke Lake, Gregory County, 2011.



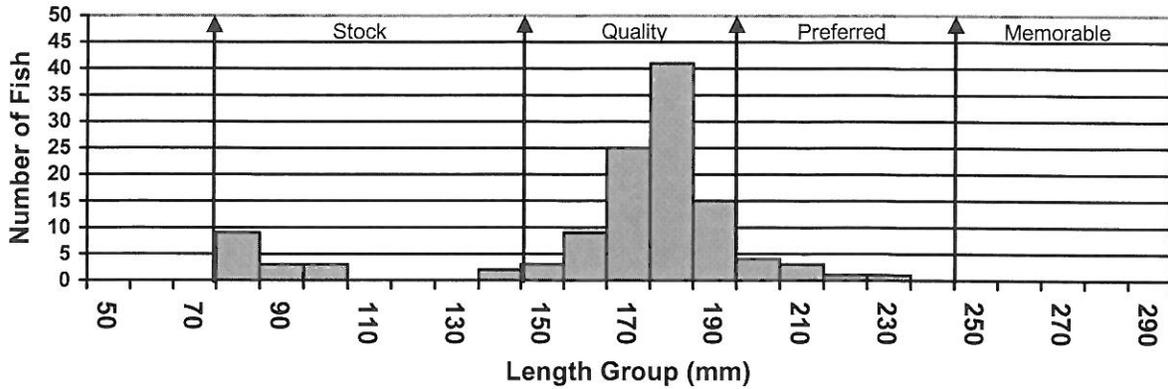
**Figure 14.** Length frequency histogram for bluegill sampled from Burke Lake, Gregory County, 2008.



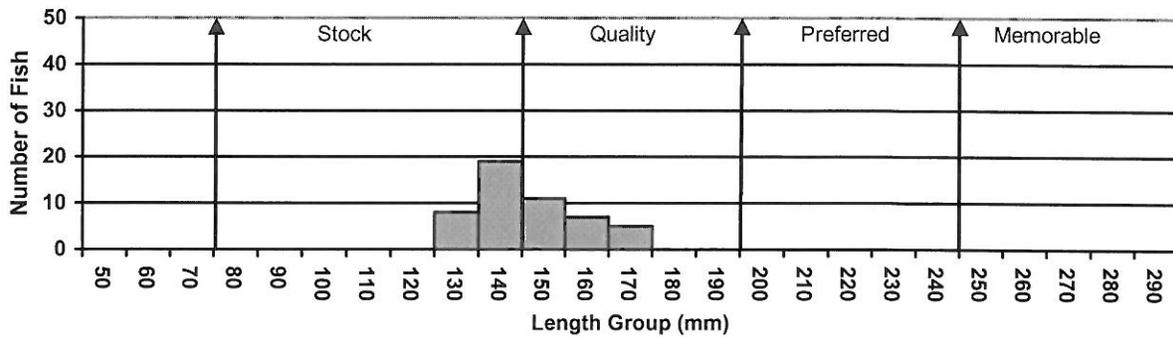
**Figure 15.** Length frequency histogram for bluegill sampled from Burke Lake, Gregory County, 2005.



**Figure 16.** Length frequency histogram for bluegill sampled from Burke Lake, Gregory County, 2002.



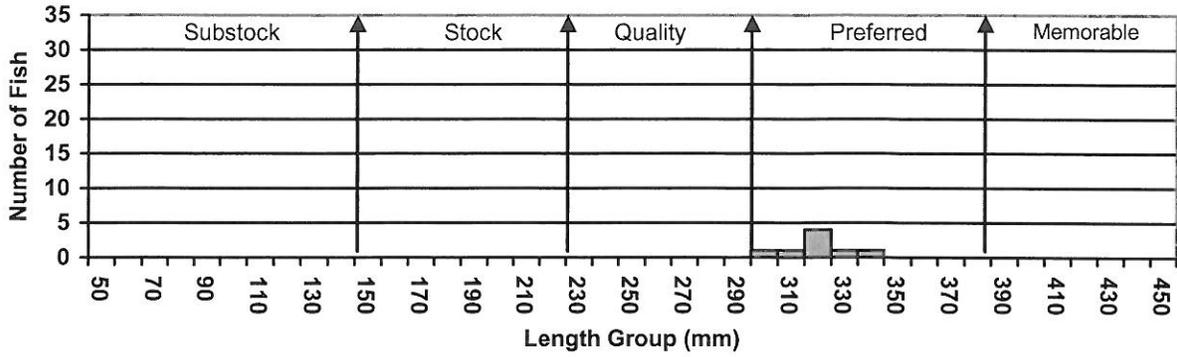
**Figure 17.** Length frequency histogram for bluegill sampled from Burke Lake, Gregory County, 1999.



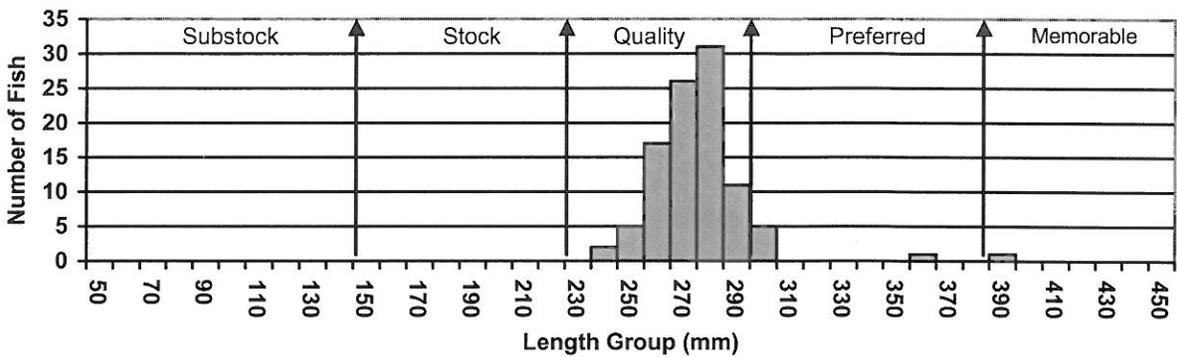
**Black Bullhead**

Burke Lake continues to contain a fairly low density black bullhead population. The CPUE of 0.8 is below the 16.6 from the 2011 survey (Table 9) as well as the 11.8 twelve year mean (Table 2). Condition is fine with a mean Wr of 89. Figures 18 through 21 illustrate the length frequency histograms for the fish sampled the last four surveys. About the biggest observation from these figures is that a year class is produced and they grow, move up the figure, get old and disappear.

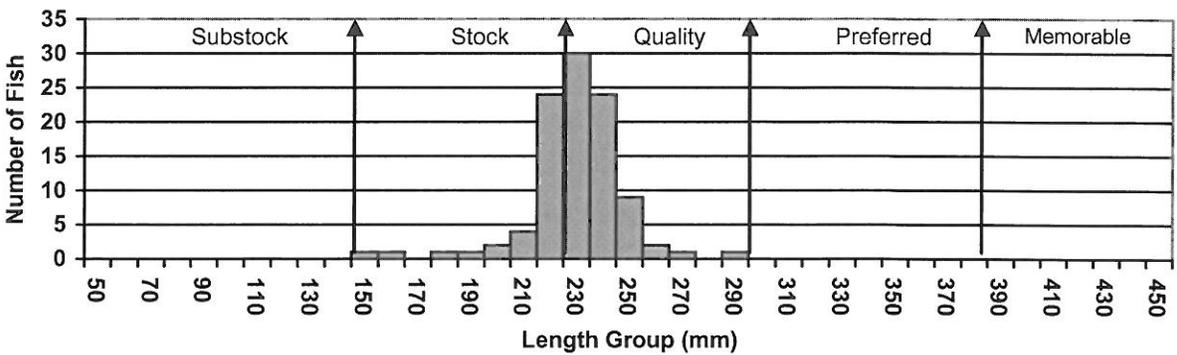
**Figure 18.** Length frequency histogram for black bullheads sampled from Burke Lake, Gregory County 2014.



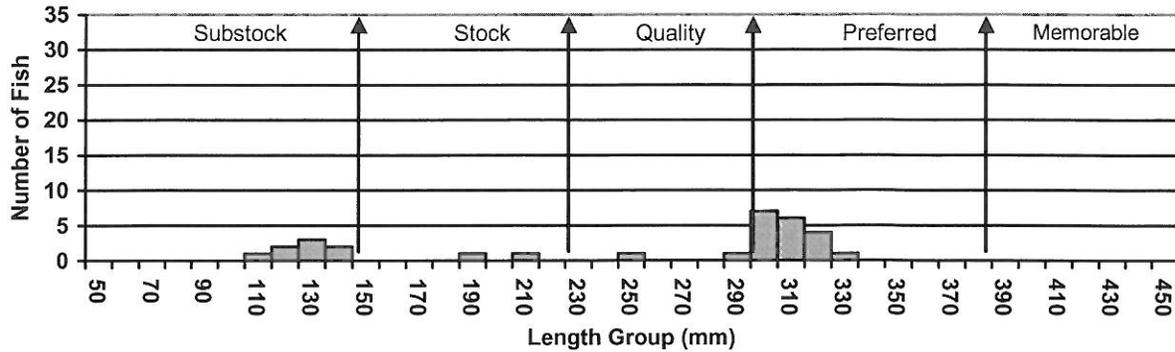
**Figure 19.** Length frequency histogram for black bullheads sampled from Burke Lake, Gregory County 2011.



**Figure 20.** Length frequency histogram for black bullheads sampled from Burke Lake, Gregory County 2008.



**Figure 21.** Length frequency histogram for black bullheads sampled from Burke Lake, Gregory County 2005.



### Yellow Perch

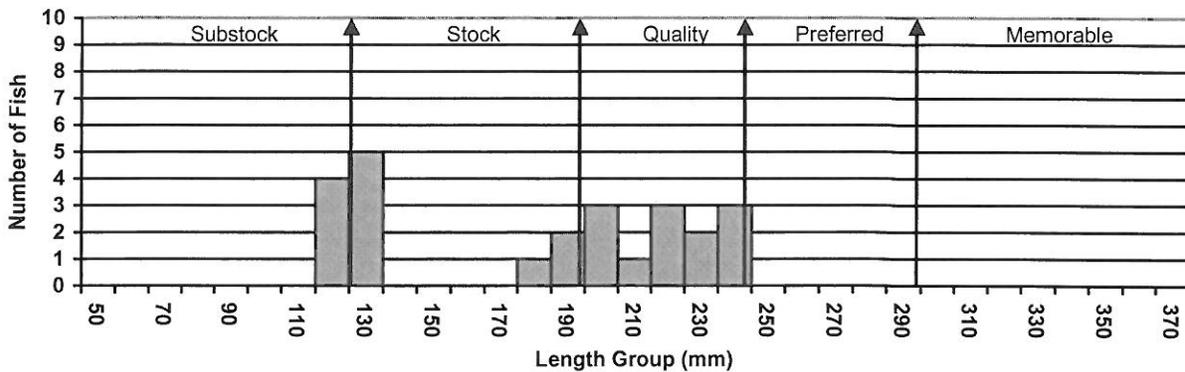
Yellow perch have made their way back into relevance in Burke Lake this survey. The CPUE of 2.4 is above the 0.3 from the 2011 survey (Table 9) as well as the 1.9 twelve year mean (Table 2). Figure 22 illustrates the length frequency histogram for the fish sampled this survey. A few fish are moving to a size desirable to anglers. Growth is slightly on the slow side with means below statewide, regional and SLI means (Table 7). Condition is good with a mean  $W_r$  of 102. This population makes a nice addition for anglers to target.

**Table 7.** Average back-calculated lengths (mm) for each age class of yellow perch sampled in Burke Lake, Gregory County, 2014.

Year Class	Age	N	Back-calculated Age				
			1	2	3	4	5
2013	1	9	97				
2011	3	8	76	119	175		
2010	4	4	75	102	154	206	
2009	5	3	75	112	157	184	231
<b>All Classes</b>		<b>24</b>	<b>81</b>	<b>111</b>	<b>162</b>	<b>195</b>	<b>231</b>
Statewide Mean			86	145	190	220	242
Region II Mean			91	152	196	219	242
SLI* Mean			87	142	185	205	219

\* Small Lakes and Impoundments

**Figure 22.** Length frequency histogram for yellow perch sampled from Burke Lake, Gregory County, 2014.



**Other Species**

Northern pike and green sunfish were the only other species sampled this survey. Neither was sampled in large enough numbers to make any inferences about their populations. Smallmouth bass and golden shiners were the species not sampled that have been in past surveys (Table 9).

**Table 8.** Stocking records from 2000 to the current for Burke Lake, Gregory County.

Year	Number	Species	Size
2000	1,862	Yellow Perch	Juvenile
2001	210	Largemouth Bass	Adult
2001	2,700	Largemouth Bass	Fingerling
2002	2,700	Largemouth Bass	Fingerling
2002	34	Largemouth Bass	Juvenile
2002	36	Largemouth Bass	Adult
2003	7,230	Largemouth Bass	Fingerling
2004	100	Largemouth Bass	Juvenile

**RECOMMENDATIONS**

1. Resurvey in 2017 to monitor the fish populations.
2. Continue to stock largemouth bass to keep bolstering the population. This will help to control the panfish populations that seem to be turning into quality populations.

**Table 9.** Gill net (GN), trap net (TN), and electrofishing (EF) CPUE for all fish species sampled in Burke Lake, Gregory County.

Species	1975	1979	1982	1985	1989	1993	1996	1999	2002	2005	2008	2011	2014
BLB (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--
BLB (TN)	0.7	0.8	9.6	6.3	79.6	1.0	2.6	9.3	1.7	3.0	10.1	16.6	0.8
BLC (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--
BLC (TN)	--	--	--	1.0	90.3	11.3	64.3	81.9	43.8	64.6	10.0	13.6	7.6
YEP (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--
YEP (TN)	8.6	0.3	0.5	1.4	1.3	0.1	0.6	2.0	6.6	0.3	1.0	0.3	2.4
LMB (EF)	--	--	--	--	--	--	--	--	82.5	15.0	60.0	76.0	75.6
LMB(GN)	--	--	--	--	--	--	--	--	--	--	--	--	--
LMB (TN)	1.1	--	0.1	--	--	--	--	--	0.3	0.2	--	--	--
NOP (GN)	--	13.0	--	--	--	--	--	--	--	--	--	--	--
NOP (TN)	--	5.6	0.9	2.9	1.4	0.5	0.4	0.9	1.9	1.0	0.4	0.4	0.2
BLG (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--
BLG (TN)	5.6	--	25.5	16.5	2.8	5.4	31.4	167.6	18.5	10.4	13.3	41.9	7.6
SMB (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--
SMB (TN)	--	--	--	--	--	0.1	--	--	--	--	--	--	--
GSF (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--
GSF (TN)	1.0	--	0.6	0.4	--	--	0.3	1.7	0.2	--	--	1.4	0.1
GOS (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--
GOS (TN)	--	--	--	--	--	--	0.5	0.1	--	--	--	--	--

BLB-Black Bullhead, BLC-Black Crappie, YEP-Yellow Perch, LMB-Largemouth Bass, NOP-Northern Pike, BLG-Bluegill, SMB-Smallmouth Bass, GSF-Green Sunfish, GOS-Golden Shiner