

Fishing access:

The entire lake and shoreline is public and open to fishing. There is a boat ramp on the northwest side. Shore fishing may be limited by submergent vegetation during the summer months.

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

The concrete plank boat ramp is in fair condition. The access trail is in fair condition but becomes impassable during wet or snow covered conditions. The spillway has suffered considerable erosion in the approach and downstream areas. This has allowed water to begin to flow under the structure compromising its integrity.

Field observations of aquatic vegetation condition:

Submergent vegetation was found along most of shoreline and consisted of milfoil and various pondweed species. Emergent vegetation was found around most of the lake and consisted of cattails and bulrushes.

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

No pollution problems were evident during the present survey. Water clarity is excellent with a secchi disc reading of 20 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 Fairfax 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	76.0	5.50	25.2	280	740	8.92	1617	836	0.84	-152.8	20.0
A	21.0	73.0	2.60	22.8	297	739	8.57	1719	859	0.87	-160.5	

BIOLOGICAL DATA

Methods:

Fairfax 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 3/4 inch knotted mesh. No experimental gill nets were set during this survey. On the evening of October 6, 2014, Fairfax Lake was electrofished for 40 minutes (4-ten minute transects) to sample the largemouth bass population. The boat was set up with 120 pulses per second DC current at 340 volts with around 19 amps to electrofish the lake that had a conductivity of 1681 μ S/cm with a water temperature of 56.6°F. Fish indices and statistics were completed using Winfin.

Results and Discussion:

Trap Net Catch

Table 2. Total catch of ten, overnight 3/4-inch frame nets at Fairfax Lake, Gregory County, June 23-25, 2014.

Species	#	%	CPUE	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Bluegill	165	88.7	16.5	± 8.0	18.3	17	2	118
Black Bullhead	10	5.4	1.0	± 0.7	43.5	100	70	96
Yellow Perch	7	3.7	0.7	± 0.8	5.0	86	57	97
Black Crappie	2	1.1	0.2	± 0.2	19.3	--	--	93
Northern Pike	2	1.1	0.2	± 0.2	0.3	--	--	88

* Fourteen year mean (1964, 1971, 1974, 1977, 1980, 1983, 1986, 1989, 1996, 1999, 2002, 2005, 2008, 2011)

Electrofishing Catch

Table 3. Total catch from four, ten-minute runs of fall nighttime electrofishing on Fairfax Lake, Gregory County, October 6, 2014.

Species	#	%	CPUE	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Largemouth Bass	16	100	24.0	± 20.1	66.5	100	58	109

* Three year mean (2005, 2008, 2011)

Largemouth Bass

The largemouth bass population in Fairfax Lake has declined since the last survey. The electrofishing CPUE of 24.0 fish per hour is below well below the 66.0 from the 2011 survey (Table 8) as well as the 66.5 three year mean (Table 3). Figures 1 through 4 illustrate the length frequency histograms for the fish sampled over the last four surveys. A lot of the decline is the lack of smaller sized fish as can be seen in Figure 1. Growth is good with a means right on with statewide, regional and SLI means (Table 4). Condition is also good with a mean W_r of 109.

Table 4. Average back-calculated lengths (mm) for each age class of largemouth bass sampled from Fairfax Lake, Gregory County, 2014.

Year Class	Age	N	Back-calculated Age						
			1	2	3	4	5	6	7
2014	0	4							
2009	5	7	78	155	220	269	312		
2008	6	4	109	194	245	300	350	381	
2007	7	1	133	263	319	375	410	468	490
All Classes		16	107	204	262	315	357	424	490
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 in Fairfax Lake, Gregory County, 2014.

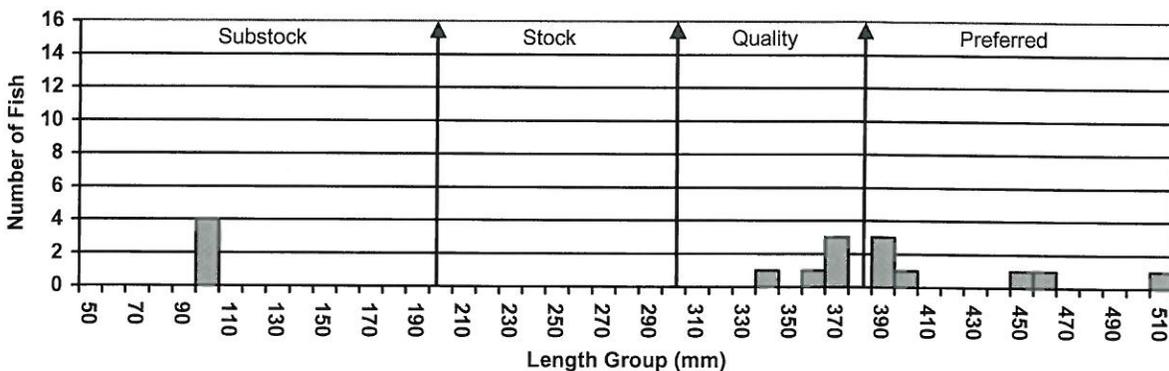


Figure 2. Length frequency histogram for largemouth bass sampled in Fairfax Lake, Gregory County, 2011.

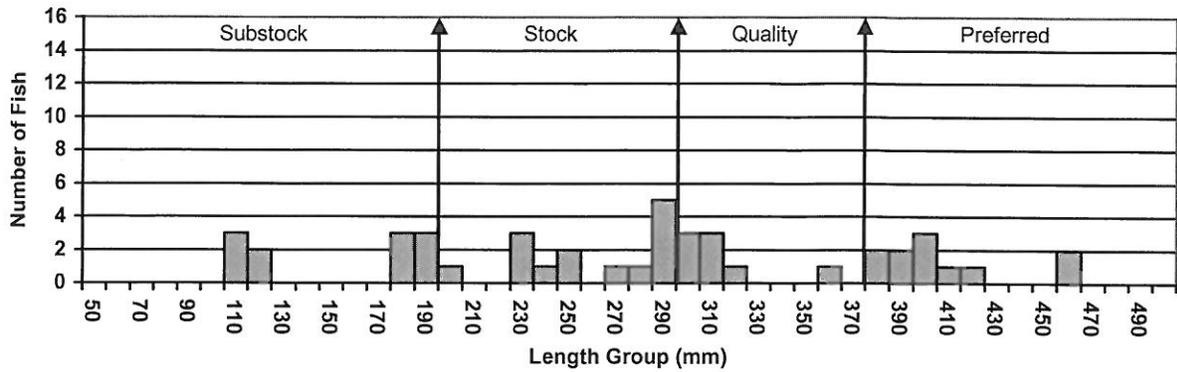


Figure 3. Length frequency histogram for largemouth bass sampled in Fairfax Lake, Gregory County, 2008.

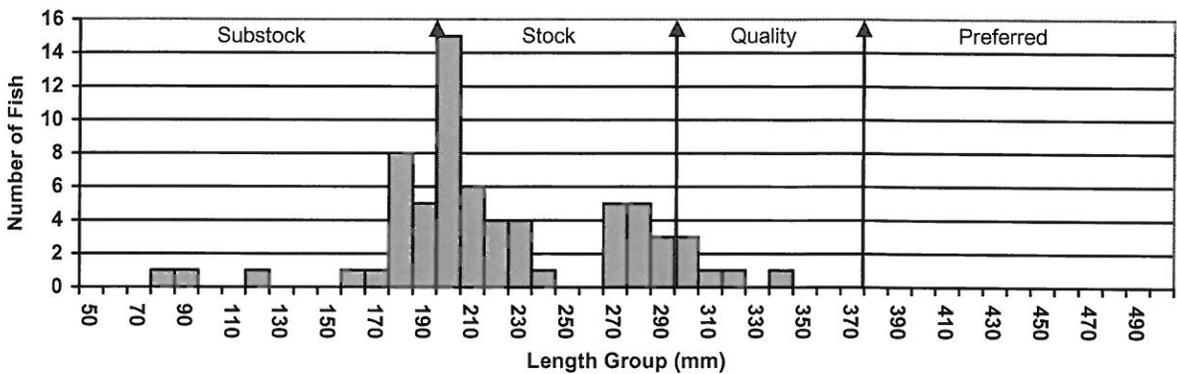
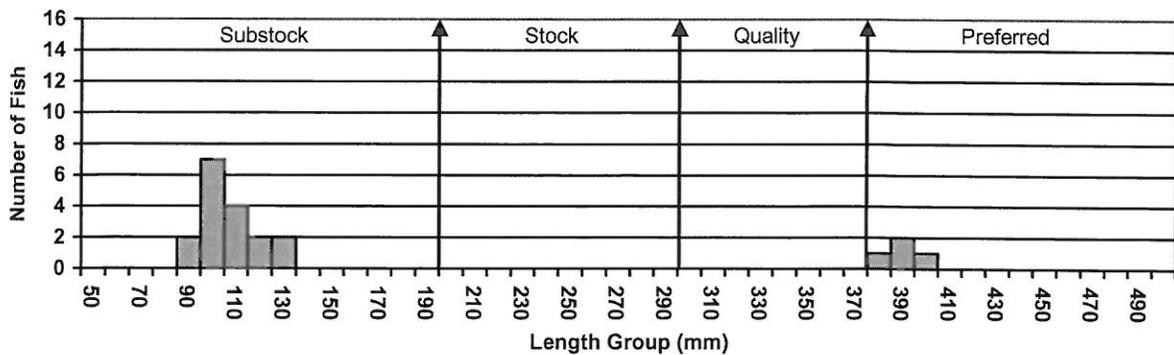


Figure 4. Length frequency histogram for largemouth bass sampled in Fairfax Lake, Gregory County, 2005.



Bluegill

The bluegill population in Fairfax Lake continues to increase. The CPUE of 16.5 is up from the 15.1 from the 2011 survey (Table 8), but slightly below the 18.3 fourteen year mean (Table 2). Figures 5 through 7 illustrate the length frequency histograms for the last three surveys and show how the lengths have changed. The biggest change this survey is a large year class moving in and the larger sizes have leveled off. Growth is good with means right around statewide, regional and SLI means (Table 5). Condition is good with a mean Wr of 118.

Table 5. Average back-calculated lengths (mm) for each age class of bluegill sampled from Fairfax Lake, Gregory County, 2014.

Year Class	Age	N	Back-calculated Age							
			1	2	3	4	5	6	7	
2013	1	66	61							
2012	2	21	44	101						
2011	3	4	44	81	147					
2010	4	2	42	68	105	173				
2009	5	1	51	87	121	141	173			
2008	6	4	42	71	109	139	162	184		
2007	7	2	37	76	110	152	170	180	192	
All Classes		100	46	81	118	151	169	182	192	
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 5. Length frequency histogram for bluegill sampled from Fairfax Lake, Gregory County, 2014.

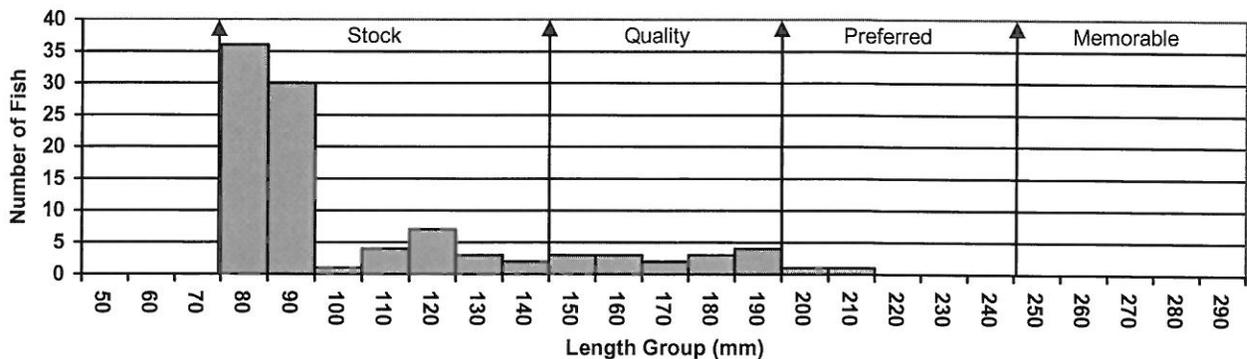


Figure 6. Length frequency histogram for bluegill sampled from Fairfax Lake, Gregory County, 2011.

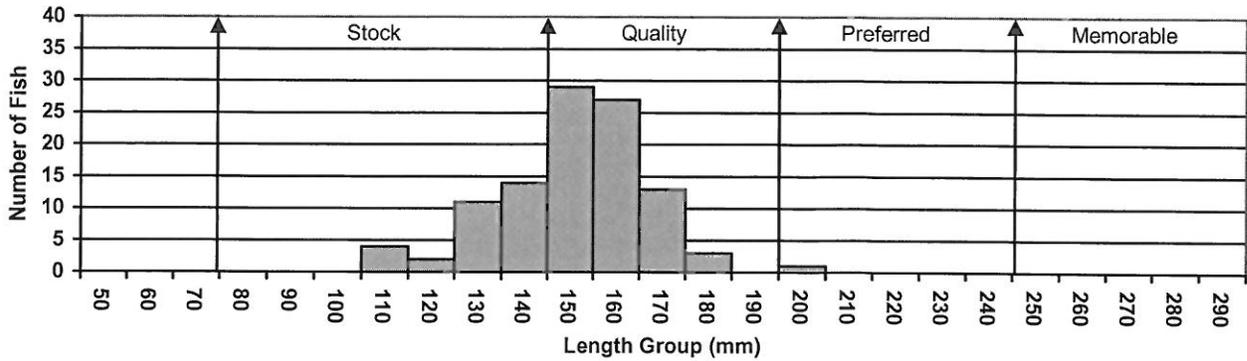
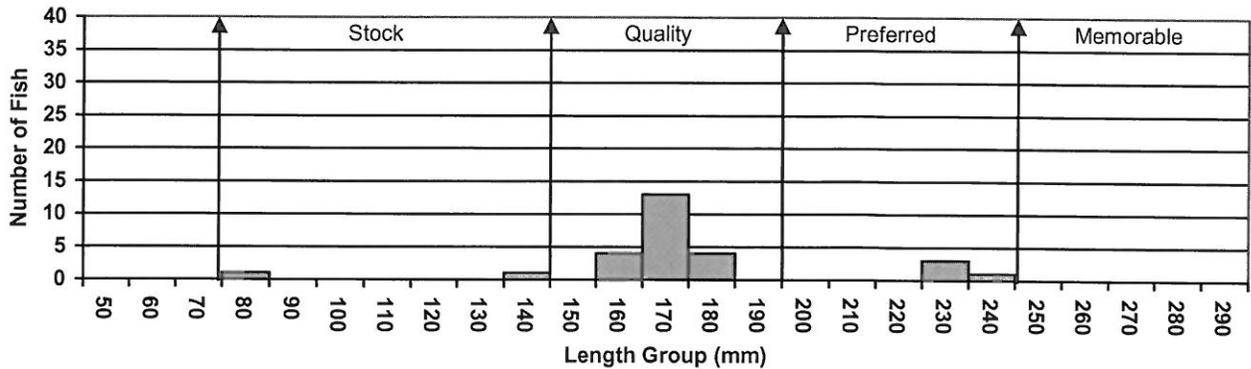


Figure 7. Length frequency histogram for bluegill sampled from Fairfax Lake, Gregory County, 2008.



Yellow Perch

Fairfax Lake continues to contain a low density yellow perch population. The CPUE of 0.7 is slightly below the 1.8 from the 2011 survey (Table 8) as well as the 5.0 fourteen year mean (Table 2). Figures 8 and 9 illustrate the length frequency histograms for the last two surveys, with not a lot changing. Growth appears to be good with means right around statewide, regional and SLI means (Table 6). Condition is good with a mean W_r of 97.

Table 6. Average back-calculated lengths (mm) for each age class of yellow perch sampled from Fairfax Lake, Gregory County, 2014.

Year Class	Age	N	Back-calculated Age						
			1	2	3	4	5	6	
2013	1	1	104						
2009	5	5	94	142	184	207	244		
2008	6	1	78	137	180	195	217	252	
All Classes		7	92	139	182	201	231	252	
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 8. Length frequency histogram for yellow perch sampled from Fairfax Lake, Gregory County, 2014.

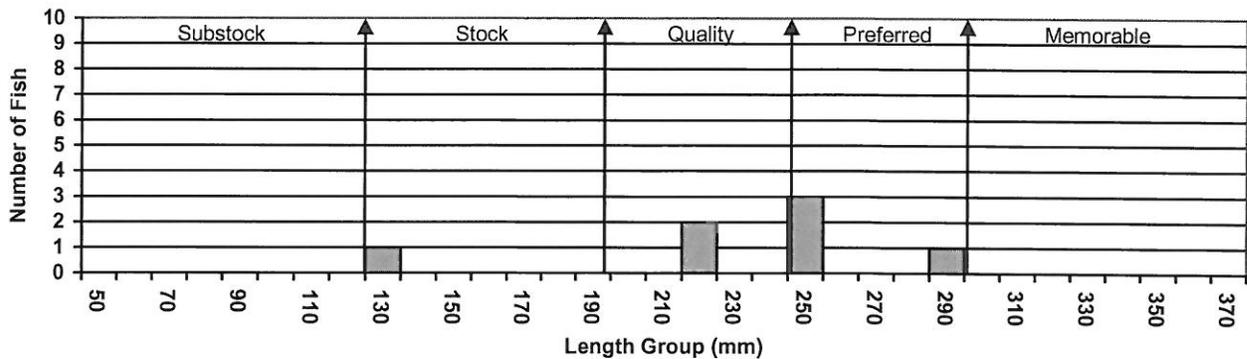
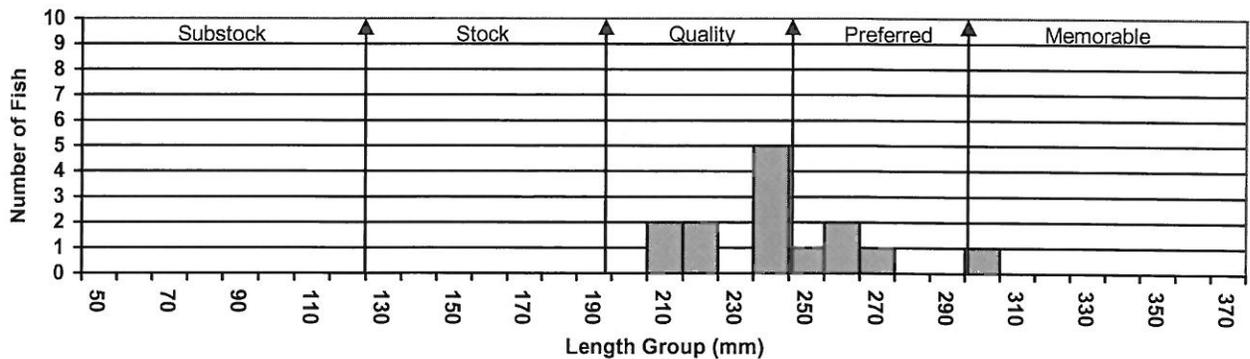


Figure 9. Length frequency histogram for yellow perch sampled from Fairfax Lake, Gregory County, 2011.



Black Bullhead

The black bullhead population in Fairfax Lake has declined dramatically. The CPUE of 1.0 is the lowest it has been in the last 15 years (Table 8). It is well below the 39.3 from the 2011 survey (Table 8) as well as the 43.5 fourteen year mean (Table 2). Figures 10 through 14 illustrate the length frequency histograms for the last five surveys. The last four show the existing population getting bigger/older and declining. Condition is good with a mean Wr of 96.

Figure 10. Length frequency histogram for black bullhead sampled in Fairfax Lake, Gregory County, 2014.

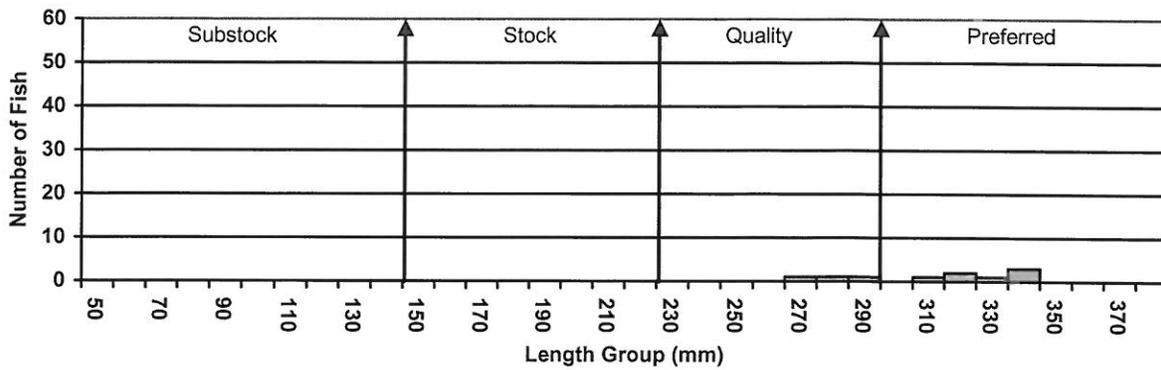


Figure 11. Length frequency histogram for black bullhead sampled in Fairfax Lake, Gregory County, 2011.

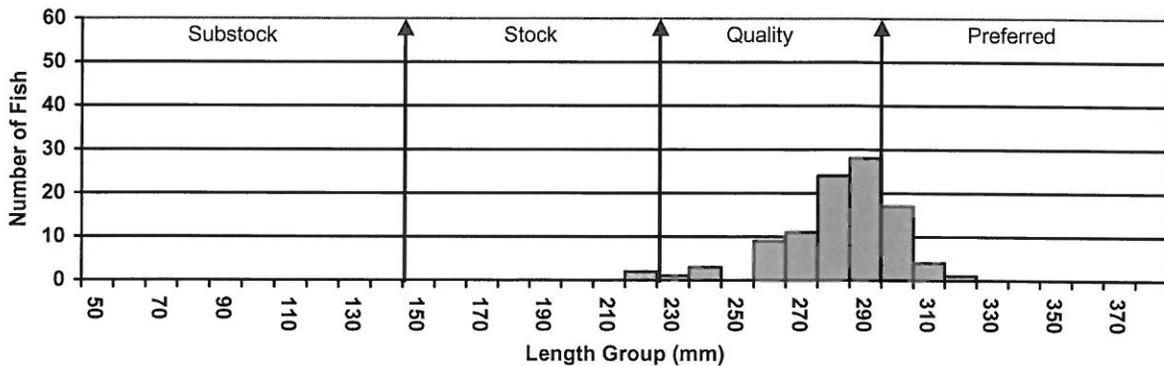


Figure 12. Length frequency histogram for black bullhead sampled in Fairfax Lake, Gregory County, 2008.

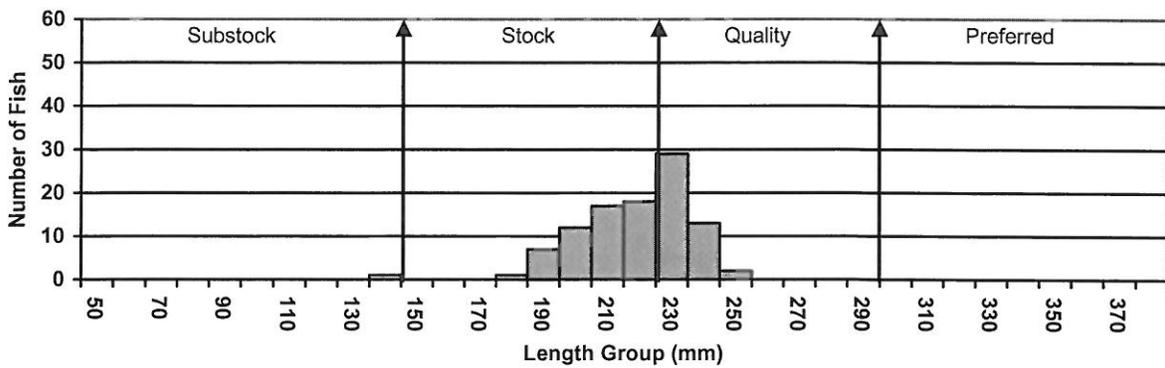


Figure 13. Length frequency histogram for black bullhead sampled in Fairfax Lake, Gregory County, 2005.

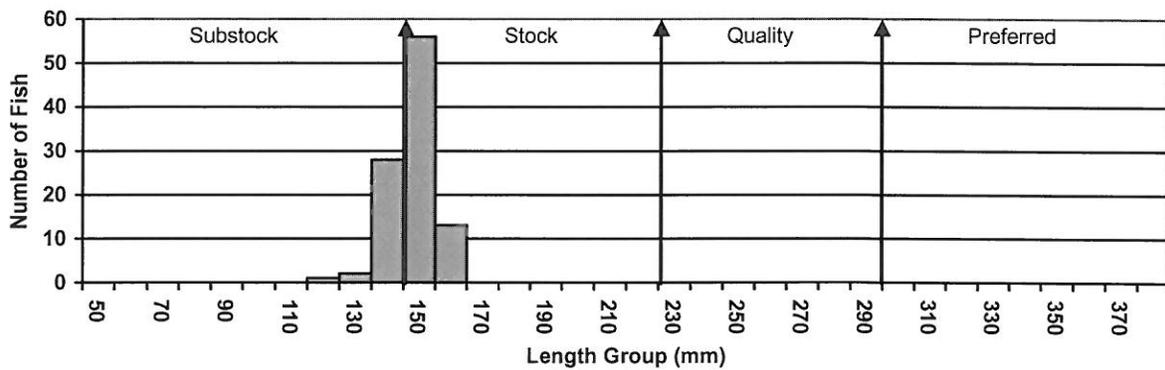
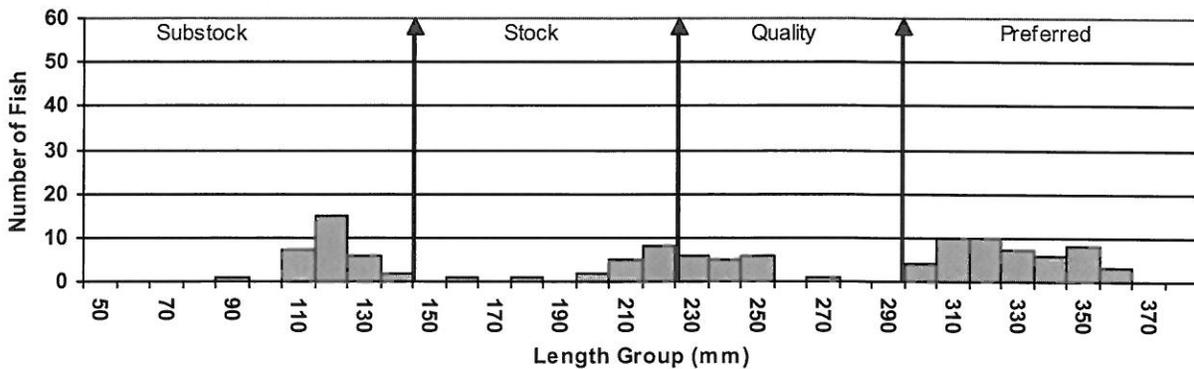


Figure 14. Length frequency histogram for black bullhead sampled in Fairfax Lake, Gregory County, 2002.



Other Species

Black crappie and northern pike were the only other species sampled this survey. Neither species was sampled in large enough numbers to make any inferences about their populations. The biggest surprise of the two was the crappies. They have had a history of being a dominant panfish species in Fairfax Lake. White sucker was the only species not sampled this survey that had been in years past (Table 8).

Table 7. Stocking records from 1998 to the present for Fairfax Lake, Gregory County.

Year	Number	Species	Size
1998	2,100	Largemouth Bass	Fingerling
1999	210	Largemouth Bass	Adult
1999	2,100	Largemouth Bass	Fingerling
2000	216	Largemouth Bass	Adult
2001	2,100	Largemouth Bass	Fingerling
2004	100	Largemouth Bass	Juvenile
2006	100	Largemouth Bass	Adult

RECOMMENDATIONS

1. Resurvey in 2017 to monitor the fish species populations.

Table 8. Gill net (GN), trap net (TN) and electrofishing (EF) CPUE for all species sampled in Fairfax Lake from when survey records started in 1964 to the present.

Species	1964	1971	1974	1977	1980	1983	1986	1989	1996	1999	2002	2005	2008	2011	2014
BLB (GN)	--	--	--	32.0	8.0	--	--	--	--	--	--	--	--	--	--
BLB (TN)	2.0	--	0.3	1.6	3.4	2.0	0.4	1.3	1.3	0.7	242.3	259.3	54.8	39.3	1.0
BLC (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BLC (TN)	--	--	--	--	--	--	--	--	130.1	117.9	1.5	2.9	0.5	17.8	0.2
YEP (GN)	--	34.0	--	66.0	2.0	1.0	--	--	--	--	--	--	--	--	--
YEP (TN)	4.2	--	1.8	14.3	12.1	6.0	1.1	2.8	2.0	1.4	21.2	--	1.0	1.8	0.7
LMB (EF)	--	--	--	--	--	--	--	--	--	--	--	33.0	100.5	66.0	24.0
LMB (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
LMB (TN)	0.3	--	0.2	0.1	0.3	--	0.3	0.1	0.3	0.1	--	--	0.4	--	--
NOP (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
NOP (TN)	--	--	--	--	--	1.0	1.5	--	0.3	0.7	0.2	0.1	0.2	0.1	0.2
WHS (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
WHS (TN)	0.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BLG (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BLG (TN)	27.4	--	16.0	9.4	7.0	24.0	17.4	29.4	17.4	65.4	24.0	0.7	2.7	15.1	16.5

BLB – Black Bullhead, BLC – Black Crappie, YEP – Yellow Perch, LMB – Largemouth Bass, NOP – Northern Pike, WHS – White Sucker, BLG - Bluegill