

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

2102-F-21-R-45

Name: Berry Lake **County (ies):** Gregory
Legal Description: T96N-R70W-Sec. 32 **GPS:** 43°04'57.40"N 99°08'32.81"W
Location from nearest town: 2 miles west of St. Charles

Date of present survey: October 1, 2012 (electrofishing – all species)
Date of last survey: June 1-3, 2009 (netting); October 22, 2009 (electrofishing)
Most recent lake management plan: F-21-R-45 (January 1, 2013 to December 31, 2017)
Management classification: Warmwater Semi-permanent

Primary Game Species	Secondary and Other Species
Bluegill	Black Crappie
Largemouth Bass	Yellow Perch
	Black Bullhead

PHYSICAL DATA

Surface Area: 12 acres **Watershed:** 1,920 acres
Maximum Depth: 17 feet **Mean Depth:** 9 feet
Lake elevation at time of survey (field observations): Full
Contour map: No **Date:** NA

Ownership of lake and adjacent lakeshore properties:

Berry Lake and the surrounding property are privately owned. To allow for the construction of the dam grade on an existing section line and subsequent flooded land, for the sum of \$350 an easement was given to Gregory County. The easement allowed for public recreational use of the lake and a strip of land 12 rods or 198 feet above the high water contour. The South Dakota Department of Game, Fish and Parks applied for and received vested water rights to 90 acre/feet of water annually at Berry Lake for public recreation in 1961.

Watershed condition with percentages of land use types:

The watershed of Berry Lake is approximately 1,920 acres or three square miles and is comprised entirely of privately owned agricultural land. Land use in the watershed of Berry Lake is split nearly evenly between cultivated cropland and native grasses used for hay and pasture. The immediate shoreline is wooded grassland.

Fishing access:

There is just a path on the southwest corner of the lake for boat access. It is not the best for launching a larger sized boat. There is access along the dam grade and in a few other spots around the shoreline for shore fishing access, but they may be hindered due to vegetation during the summer.

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

Dam grade is the county gravel road and in good shape. The spillway is also in good shape. The boat ramp is just a path to the water with a hole in the cattails.

Field observations of aquatic vegetation condition:

Emergent vegetation consists of mainly cattails around just over half the shoreline. The submergent vegetation consists of several pondweed species and is found throughout most of the lake.

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

No pollution problems were evident during the survey period. Water chemistry readings were not done this survey due to the meter not working properly.

BIOLOGICAL DATA**Methods:**

On the evening of October 1, 2012, Berry Lake was electrofished for 20 minutes (2-ten minute transects) to sample all species. The boat was set up with 120 pulses per second of DC current at 170 volts with around 14 amps to electrofish the lake that had a conductivity of 434 μ S/cm with a water temperature of 61.0°F. Fish indices and statistics were completed using Winfin.

Results and Discussion:

Electrofishing Catch

Table 1. Total catch from two ten minute runs of fall nighttime electrofishing on Berry Lake, Gregory County, October 1, 2012.

Species	#	%	CPUE	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Bluegill	353	66.7	1059.0	± 821.8	1397.3	58	3	114
Largemouth Bass	78	14.8	234.0	± 240.1	160.5	25	3	107
Black Crappie	64	12.1	192.0	± 258.6	60.0	11	5	112
Yellow Perch	34	6.4	102.0	± 240.1	0.0	41	4	87

* Two year mean (2003, 2006 – electrofish all species)

Largemouth Bass

The largemouth bass population in Berry Lake has seen an increase in its population. The electrofishing CPUE of 234.0 fish per hour is well above the 32.0 from 2009 (Table 5) as well as the 160.5 two year mean (Table 1). Growth is good with means right on with statewide, regional and SLI means (Table 2). Condition is good with a mean Wr of 107. Figures 1 through 4 illustrate the length frequency histograms for the last four surveys. They illustrate the changes that have occurred. The biggest change is that this population has a better distribution over several sized categories. This population is the main predator population to control the abundant panfish species, so hopefully their numbers stay high.

Table 2. Average back-calculated lengths (mm) for each age class of largemouth bass sampled from Berry Lake, Gregory County, 2012.

Year Class	Age	N	Back-calculated Age			
			1	2	3	4
2011	1	42	101			
2010	2	29	92	204		
2009	3	6	92	206	294	
2008	4	1	87	153	230	360
All Classes		78	93	188	262	360
Statewide Mean			96	182	250	305
Region II Mean			105	183	246	296
SLI* Mean			99	183	246	299

* Small Lakes and Impoundments

Figure 1. Length frequency histogram for largemouth bass sampled from Berry Lake, Gregory County, 2012.

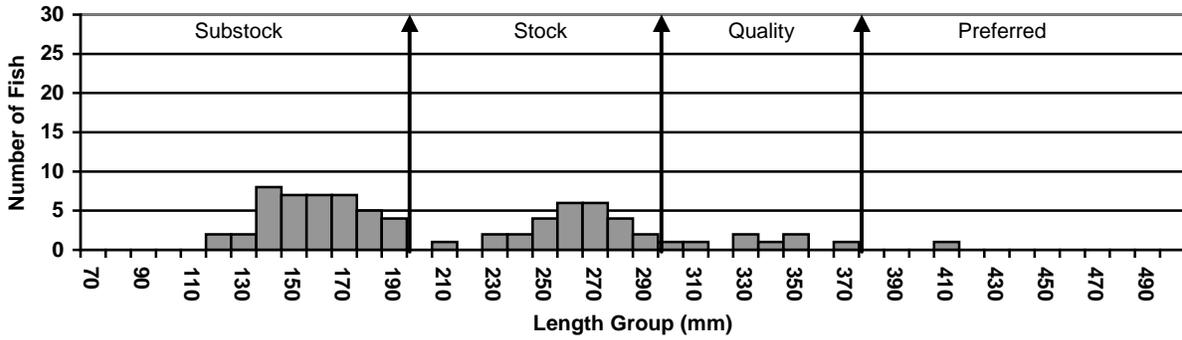


Figure 2. Length frequency histogram for largemouth bass sampled from Berry Lake, Gregory County, 2009.

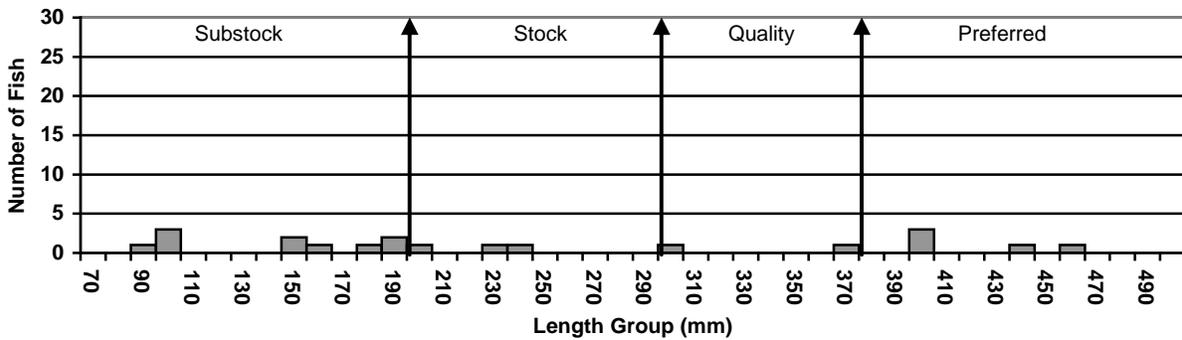


Figure 3. Length frequency histogram for largemouth bass sampled from Berry Lake, Gregory County, 2006.

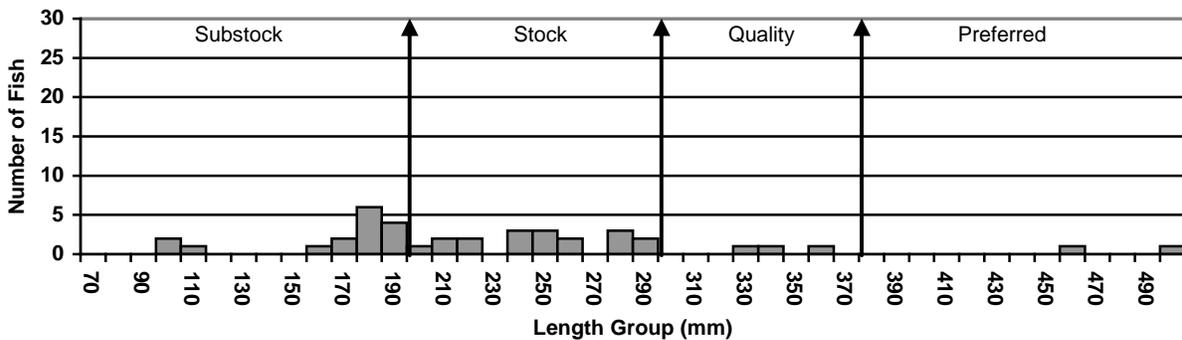
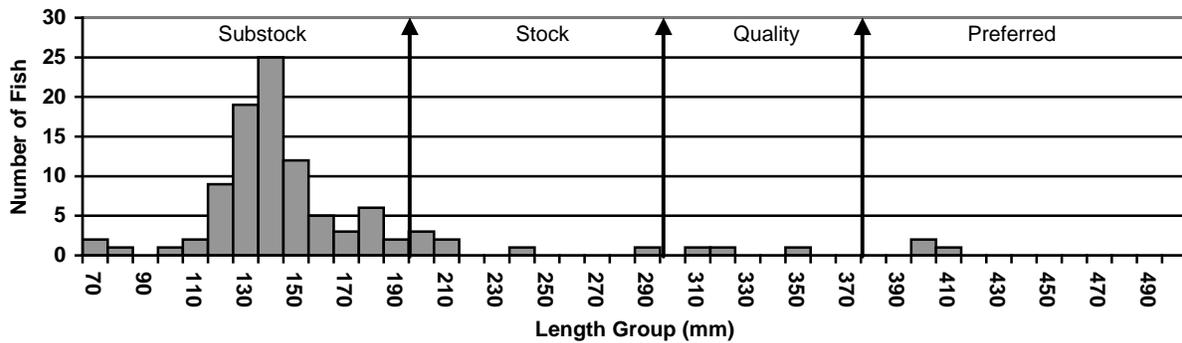


Figure 4. Length frequency histogram for largemouth bass sampled from Berry Lake, Gregory County, 2003.



Bluegill

Bluegills continue to be the dominant panfish species present in Berry Lake. The survey was changed from netting to electrofishing only this year again. The CPUE of 1059.0 is actually below the 2175.0 from the 2006 survey (Table 5), which is the last time that electrofishing for all species was done, and it is below the 1397.3 two year electrofishing mean (Table 1). Condition remains good with a mean Wr of 114. Growth is also good with means right on with statewide, regional and SLI means (Table 3). This high of a density population would generally start to stunt, but no signs are started yet. Figures 5 through 9 illustrate the length frequency histograms for the last five surveys. Size structure appears to holding relatively the same. A decrease in density may help push some fish into large sizes.

Table 3. Average back-calculated lengths (mm) for each age class of bluegill sampled from Berry Lake, Gregory County, 2012.

Year Class	Age	N	Back-calculated Age						
			1	2	3	4	5	6	7
2011	1	29	48						
2010	2	49	48	93					
2009	3	20	53	113	155				
2007	5	1	42	90	153	190	202		
2005	7	1	38	81	109	146	166	182	196
All Classes		100	46	94	139	168	184	182	196
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 Berry Lake, Gregory County, 2012.

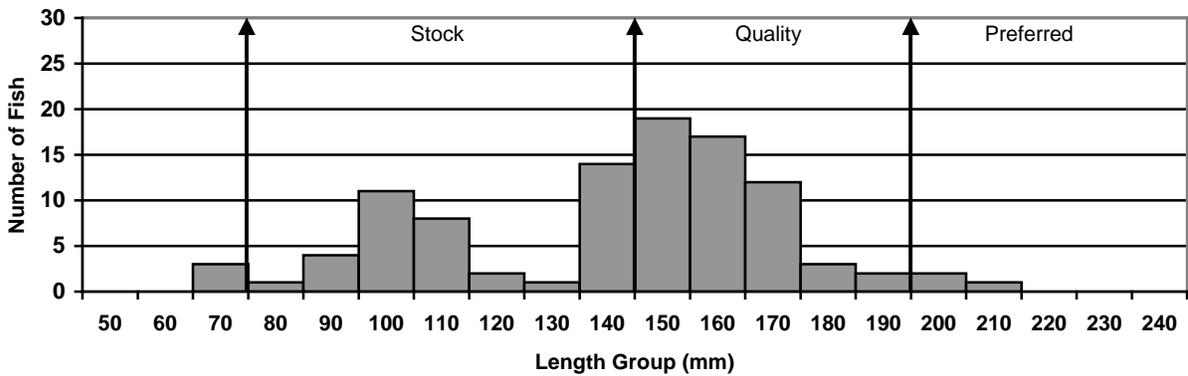


Figure 6. Length frequency histogram for bluegill sampled from Berry Lake, Gregory County, 2009.

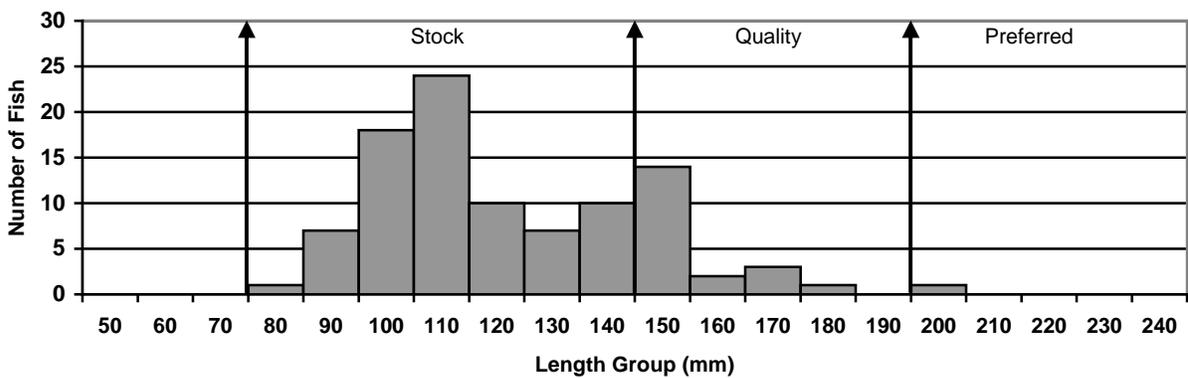


Figure 7. Length frequency histogram for bluegill sampled from Berry Lake, Gregory County, 2006.

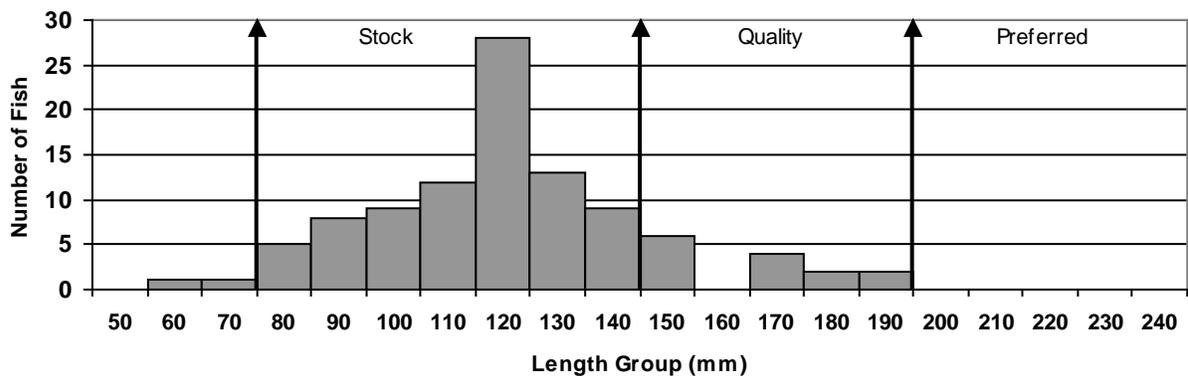


Figure 8. Length frequency histogram for bluegill sampled from Berry Lake, Gregory County, 2003.

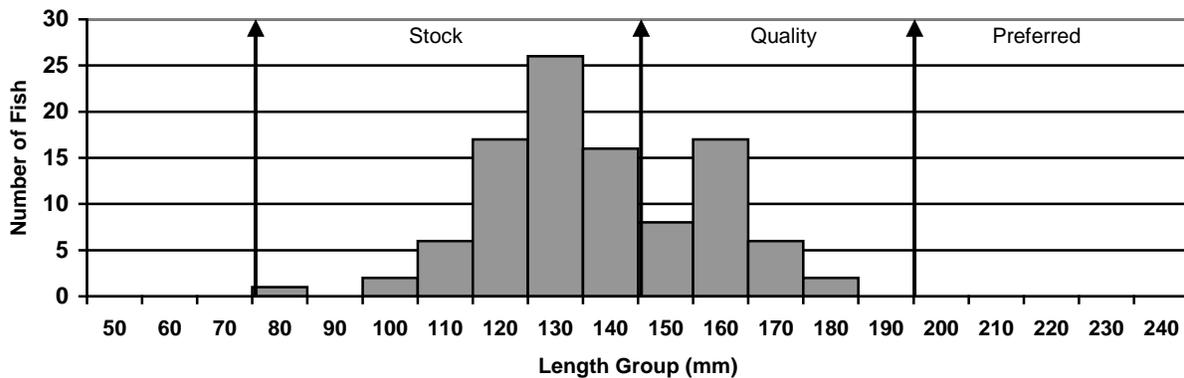
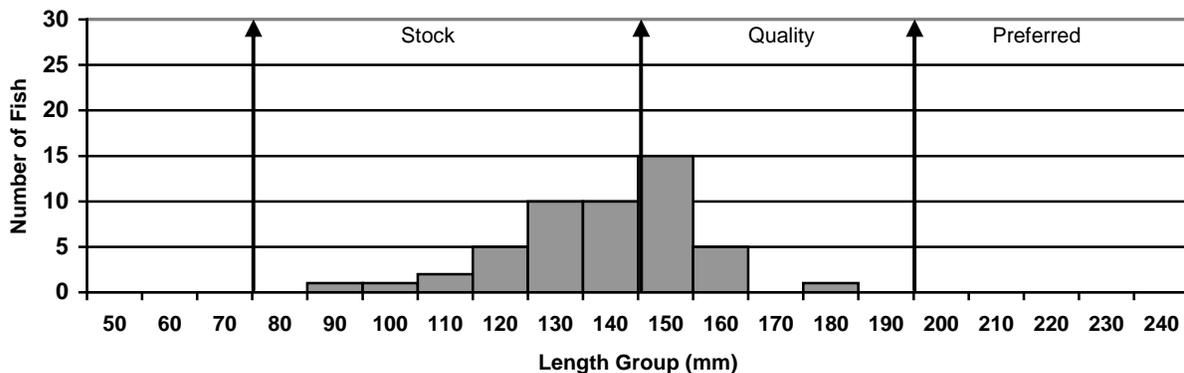


Figure 9. Length frequency histogram for bluegill sampled from Berry Lake, Gregory County, 2000.



Black Crappie

Berry Lake continues to contain a black crappie population. The electrofishing CPUE of 192.0 fish per hour is above the 84.0 from 2006 (Table 5), which is the last year of all species electrofishing, as well as the 60.0 two year electrofishing mean (Table 1). Growth appears to be good with means right on with statewide, regional and SLI means (Table 4), although the population is a young population. Condition is good with a mean W_r of 112. Figures 10 through 12 illustrate the length frequency histograms for the past three surveys. Not much has changes on the size structure; just have a larger year class of stock sized fish.

Table 4. Average back-calculated lengths (mm) for each age class of black crappie sampled from Berry Lake, Gregory County, 2012.

Year Class	Age	N	Back-calculated Age	
			1	2
2011	1	57	78	
2010	2	7	98	178
All Classes		64	88	178
Statewide Mean			83	147
Region II Mean			75	132
SLI* Mean			78	134

* Small Lakes and Impoundments

Figure 10. Length frequency histogram for black crappie sampled from Berry Lake, Gregory County, 2012.

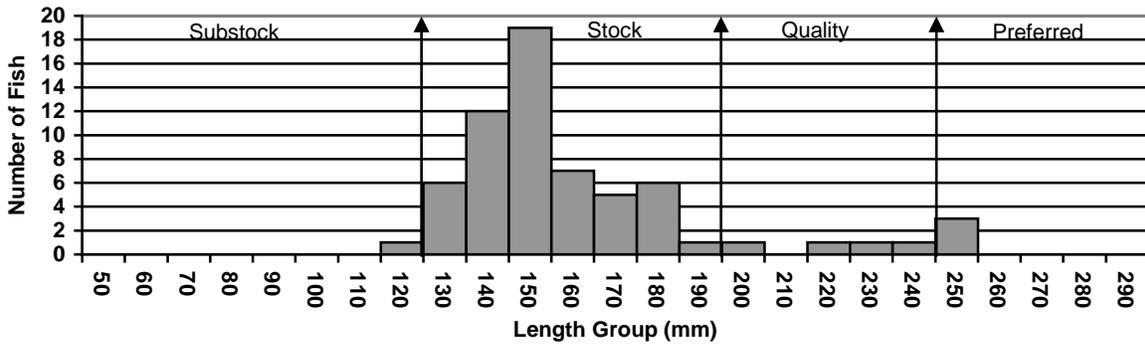


Figure 11. Length frequency histogram for black crappie sampled from Berry Lake, Gregory County, 2009.

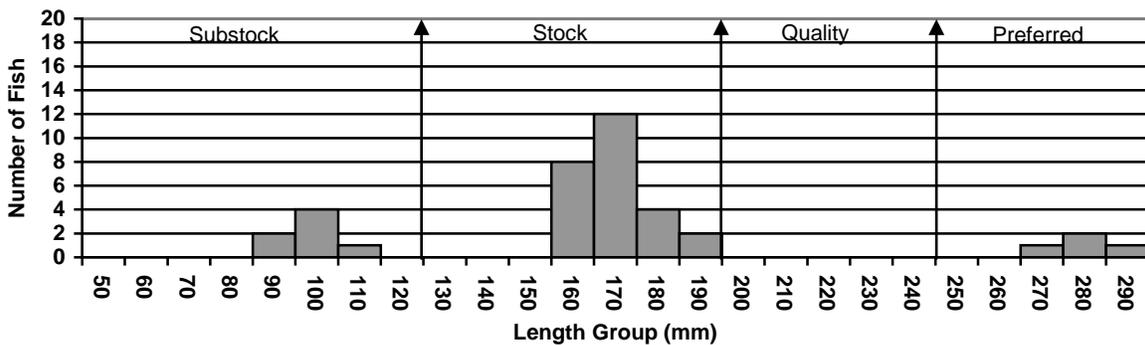
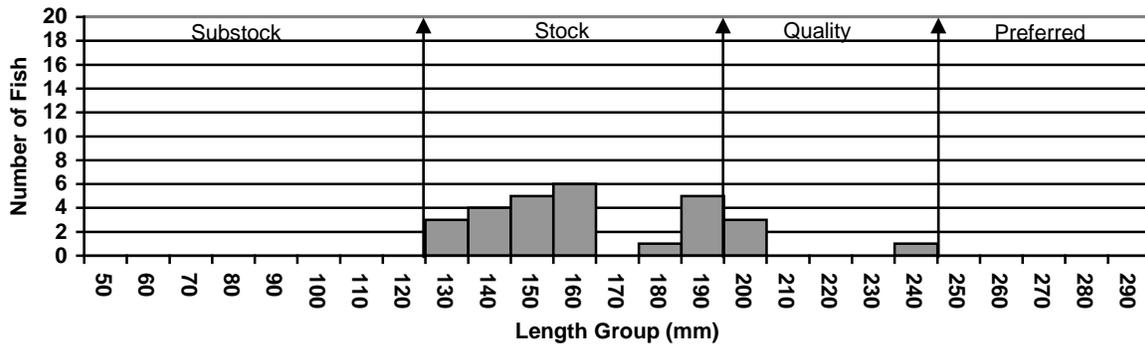


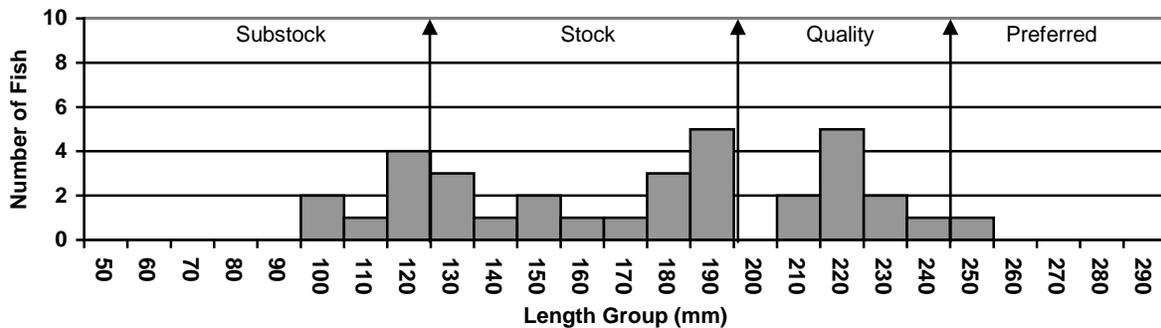
Figure 12. Length frequency histogram for black crappie sampled from Berry Lake, Gregory County, 2006.



Other species

Yellow perch were the only other species sampled this survey. The CPUE was 102.0 fish per hour of electrofishing. No other data is available to compare too for all species electrofishing. Condition is fine with a mean Wr of 87. Figure 13 illustrates the length frequency histogram for the fish sampled this survey.

Figure 13. Length frequency histogram for yellow perch sampled from Berry Lake, Gregory County, 2012.



Black bullhead, walleye, common carp, green sunfish, and hybrid sunfish were the species not sampled that had been in past surveys (Table 5).

Stocking records: No stockings have been done in the last ten years to report.

RECOMMENDATIONS

1. Remove bluegills to try and push some to larger sizes. This will also help all other species increase their growth rates and size structure.
2. Resurvey in 2015 to monitor the fish populations found in Berry Lake.

Table 5. Gill net (GN), trap net (TN) and electrofishing (EF) CPUE for all fish species sampled in Berry Lake since surveys were started.

Species	1956	1967	1972	1975	1978	1981	1984	1988	1991	1994	1997	2000	2003	2006	2009	2012
BLB (EF)	--	--	--	--	--	--	--	--	--	--	--	--	22.5	9.0	--	--
BLB (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BLB (TN)	0.6	19.3	20.0	4.0	11.0	0.6	1.4	2.6	2.4	0.5	1.0	6.9	--	--	3.6	--
BLC (EF)	--	--	--	--	--	--	--	--	--	--	--	--	36.0	84.0	--	192.0
BLC (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
BLC (TN)	--	--	--	--	--	--	7.6	54.8	1.5	5.5	16.8	1.3	--	--	4.6	--
YEP (EF)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	102.0
YEP (GN)	--	--	--	--	3.0	23.0	--	--	--	--	--	--	--	--	--	--
YEP (TN)	0.1	7.0	0.7	--	1.8	4.8	2.4	2.1	0.3	0.3	1.3	0.5	--	--	1.6	--
LMB (EF)	--	--	--	--	--	--	--	--	--	--	--	--	204.0	117.0	32.0	234.0
LMB (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
LMB (TN)	0.1	--	0.7	2.8	1.3	0.3	--	0.3	0.3	0.3	--	--	--	--	0.5	--
WAE (EF)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
WAE (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
WAE (TN)	2.0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
COC (EF)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
COC (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
COC (TN)	--	--	--	--	--	--	--	--	--	--	--	0.1	--	--	--	--
BLG (EF)	--	--	--	--	--	--	--	--	--	--	--	--	619.5	2175.0	--	1059.0
BLG (GN)	--	--	--	--	1.0	--	--	--	--	--	--	--	--	--	--	--
BLG (TN)	94.3	24.0	48.7	42.8	90.3	29.0	3.8	7.3	12.1	6.9	27.1	41.4	--	--	14.3	--
GSF (EF)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GSF (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GSF (TN)	--	--	--	0.3	1.0	0.3	--	0.8	--	--	--	--	--	--	--	--
HYB (EF)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HYB (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HYB (TN)	--	--	--	--	--	--	--	--	--	0.3	--	--	--	--	--	--

BLB-Black Bullhead, BLC-Black Crappie, YEP-Yellow Perch, LMB-Largemouth Bass, WAE-Walleye, COC-Common Carp, BLG-Bluegill, GSF-Green Sunfish, HYB-Hybrid Sunfish