

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

2102-F-21-R-46

Name: Roosevelt **County:** Tripp
Legal Description: T97N-R74W-Sec. 20 **GPS:** 43°12'10.83"N 99°36'53.45"W
Location from nearest town: 5 miles east, 2 miles south of Colome

Date of present survey: July 8-10, 2013 (netting); October 8, 2013 (electrofishing)
Date of last survey: June 27-29, 2011 (netting); September 27, 2011 (electrofishing)
Most recent lake management plan: F-21-R-40 (January 1, 2008 to December 31, 2012)
Management classification: Warmwater Permanent

Primary Game Species	Secondary and Other Species
Largemouth Bass	Black Bullhead
Bluegill	Green Sunfish
Northern Pike	Golden Shiner
Yellow Perch	Black Crappie

PHYSICAL DATA

Surface Area: 85 acres **Watershed:** 3,200 acres
Maximum Depth: 18 feet **Mean Depth:** 6 feet
Lake elevation at time of survey (field observations): Full
Contour map: Yes

Ownership of lake and adjacent lakeshore properties:

Roosevelt Lake is an 85-acre impoundment in eastern Tripp County. The lake was constructed by the Works Progress Administration (WPA) in 1936. The artificial lake was created by the construction of an earthen dam on a tributary of Ponca Creek. To allow for public use of the newly formed lake, an easement was granted to the State of South Dakota in 1939 for the flooded area and a strip of land 12 feet above the high water contour, as well as a 66-foot right-of-way from the dam to the nearest section line. The dam at Roosevelt Lake failed in 1947 and was rebuilt in 1948 by the South Dakota Department of Game, Fish and Parks. On November 28, 1967, the Department of Game, Fish and Parks purchased the SE1/4 of section 20 in Township 97N of Range 74W. The remainder of the lake is privately owned.

Watershed condition with percentages of land use types:

The watershed for Roosevelt Lake is relatively small at five square miles or approximately 3,200 acres. Land use in the watershed is approximately 80% native grasses utilized as pasture or hay land, and 20% cultivated agricultural land. Land owned by the State of South Dakota is comprised of 70 acres of native grasses and tree belts, 40 acres of marshland, and 50 acres of water.

Fishing access:

There is a new boat ramp for water access on the northeast corner of the lake. Shore access around most of the lake is fair due to public ownership of the shoreline. The shore fishing may be somewhat limited due to aquatic vegetation.

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

The dam grade and concrete spillway are in good condition. The boat ramp is new. There is also a vault toilet that is in good condition.

Field observations of aquatic vegetation condition:

Emergent vegetation surrounds most of the shoreline except along the dam grade and consists of mainly cattails and rushes. Submergent vegetation is found throughout the lake to depths of around 7-8 feet. Many species comprise the dense mats of submergent vegetation.

CHEMICAL DATA

Field observations of water quality and pollution problems:

No pollution problems were evident at the time of the survey. Water clarity was good with a secchi disc reading of 3.5 feet. Other water quality characteristics were measured in the field on July 8, 2013, 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 Roosevelt, Tripp County, July 8, 2013.

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	78.0	3.77	10.6	207	383	9.39	540	270	0.26	37.5	3.5
A	16.0	70.0	0.42	52.8	385	236	7.89	663	331	0.32	-269.5	

BIOLOGICAL DATA

Methods:

Roosevelt Lake was sampled on July 8-10, 2013, with ten overnight trap net sets. The trap nets have 3ft x 5ft frames, 60ft leads, and ¾ inch knotted mesh. Two experimental gill nets were also set. The gill nets are 150ft x 6ft with 25ft panels of ½, ¾, 1, 1-¼, 1-½, and 2-inch monofilament mesh. On the evening of October 8, 2013, Roosevelt 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 at 340 volts with around 12 amps to electrofish the lake that had a conductivity of 591µS/cm with a water temperature of 53.7°F. Fish indices and statistics were completed using Winfin.

Results and Discussion:

Electrofishing Catch

Table 2. Total catch from six ten-minute runs of fall nighttime electrofishing on Roosevelt, Tripp County, October 8, 2013.

Species	#	%	CPUE	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Largemouth Bass	194	100	194.0	± 34.6	86.7	89	57	120

* Five year mean (1986, 2002, 2005, 2008, 2011)

Gill net catch

Table 3. Total catch of two, 150ft experimental gill nets at Roosevelt, Tripp County, July 8-10, 2013.

Species	#	%	CPUE	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Northern Pike	9	42.8	4.5	± 4.6	2.7	100	57	84
Bluegill	7	33.3	3.5	± 1.5	1.5	100	43	103
Black Crappie	2	9.5	1.0	± 3.1	3.4	--	--	104
Black Bullhead	1	4.8	0.5	± 1.5	19.4	--	--	109
Walleye	1	4.8	0.5	± 1.5	1.5	--	--	90
Largemouth Bass	1	4.8	0.5	± 1.5	1.7	--	--	91

* Seven year mean (1976, 1982, 1984, 2002, 2005, 2008, 2011)

Trap Net Catch

Table 4. Total catch of ten, overnight ¾-inch frame nets at Roosevelt, Tripp County, July 8-10, 2013.

Species	#	%	CPUE	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Black Crappie	250	59.2	25.0	± 8.0	1.5	24	0	112
Bluegill	125	29.6	12.5	± 5.8	13.9	53	3	114
Yellow Perch	19	4.5	1.9	± 0.8	7.1	84	42	94
Black Bullhead	11	2.6	1.1	± 0.6	20.3	100	91	98
Northern Pike	7	1.7	0.7	± 0.3	1.1	--	--	88
Largemouth Bass	7	1.7	0.7	± 0.4	0.2	--	--	106
Walleye	3	0.7	0.3	± 0.3	0.1	--	--	86

* Fifteen year mean (1970, 1976, 1979, 1982, 1984, 1986, 1990, 1992-93, 1996, 1999, 2002, 2005, 2008, 2011)

Largemouth Bass

Roosevelt Lake continues to contain a quality largemouth bass fishery. The electrofishing CPUE of 194.0 fish per hour is above the 126.0 from the 2011 survey (Table 13) as well as the 86.7 five year mean (Table 2). The population continues to have a good size distribution with a PSD of 89 and an RSD-P of 57 compared to the 63 and 33, respectively, from the 2011 survey. Figures 1 through 5 illustrate the length frequency histograms for the past five surveys and show this good distribution. Growth is fine with means at or just slightly below statewide, regional and SLI means (Table 5). Condition is good with a mean Wr of 120.

Table 5. Average back-calculated lengths (mm) for each age class of largemouth bass sampled from Roosevelt, Tripp County, 2013.

Year Class	Age	N	Back-calculated Age													
			1	2	3	4	5	6	7	8	9	10	11	12		
2013	0	55														
2011	2	1	78	131												
2010	3	3	93	169	227											
2009	4	11	93	153	226	273										
2008	5	11	87	163	229	293	344									
2007	6	14	100	160	228	281	322	358								
2006	7	8	97	165	235	291	325	364	390							
2005	8	4	104	198	237	289	348	376	399	417						
2004	9	7	96	160	224	270	308	339	374	403	425					
2003	10	4	87	155	215	274	319	360	396	427	442	458				
2002	11	1	96	149	194	229	270	296	362	398	432	438	453			
2001	12	1	93	130	193	228	279	311	349	374	398	414	434	461		
All Classes		120	93	158	221	270	314	343	378	404	424	437	444	461		
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 from Roosevelt, Tripp County, 2013.

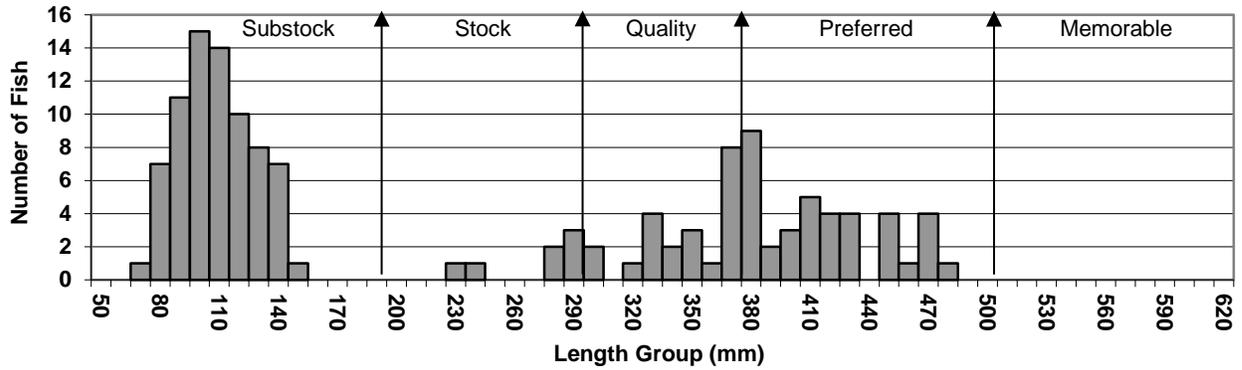


Figure 2. Length frequency histogram for largemouth bass sampled from Roosevelt, Tripp County, 2011.

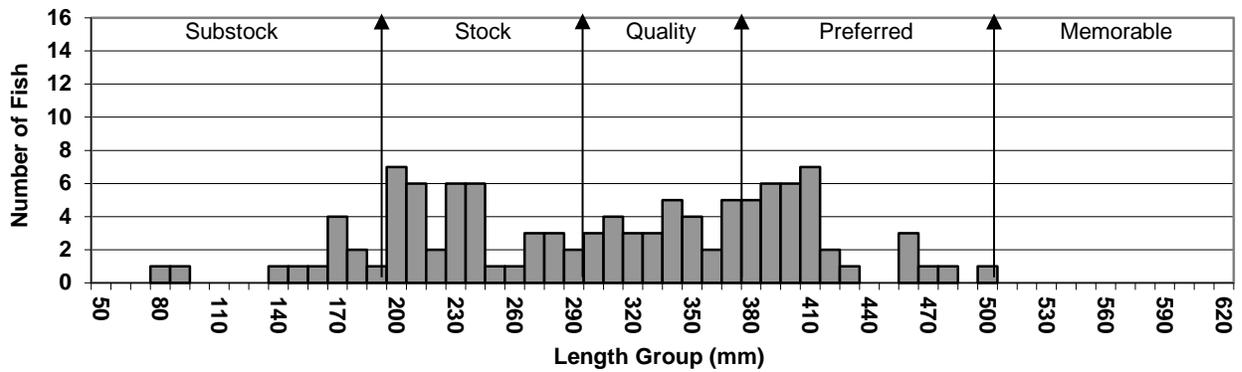


Figure 3. Length frequency histogram for largemouth bass sampled from Roosevelt, Tripp County, 2008.

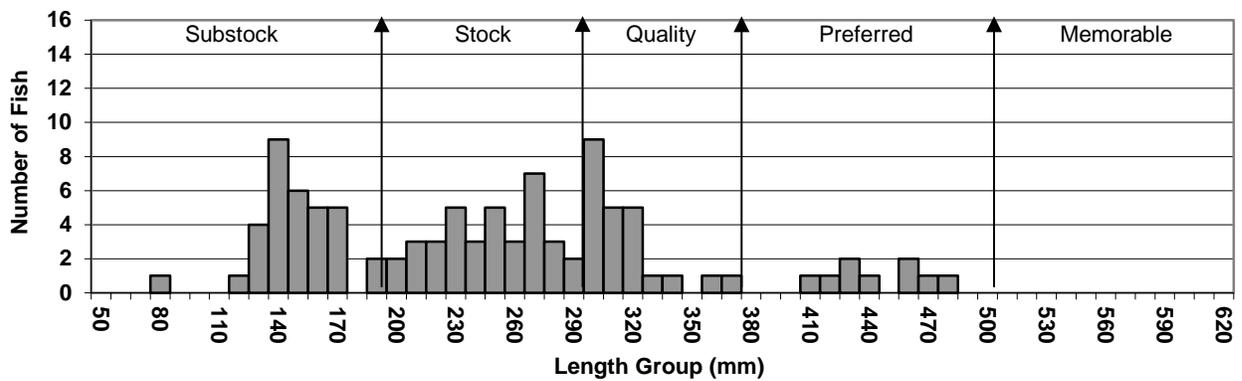


Figure 4. Length frequency histogram for largemouth bass sampled from Roosevelt, Tripp County, 2005.

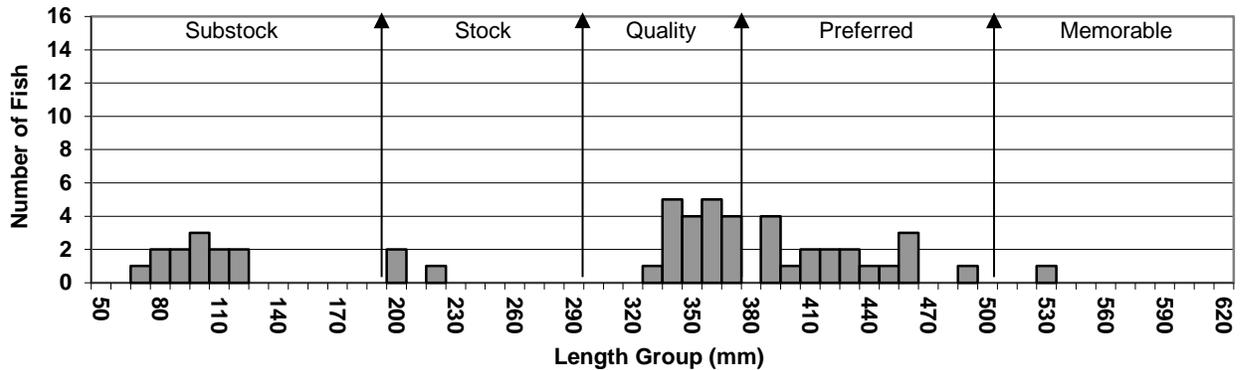
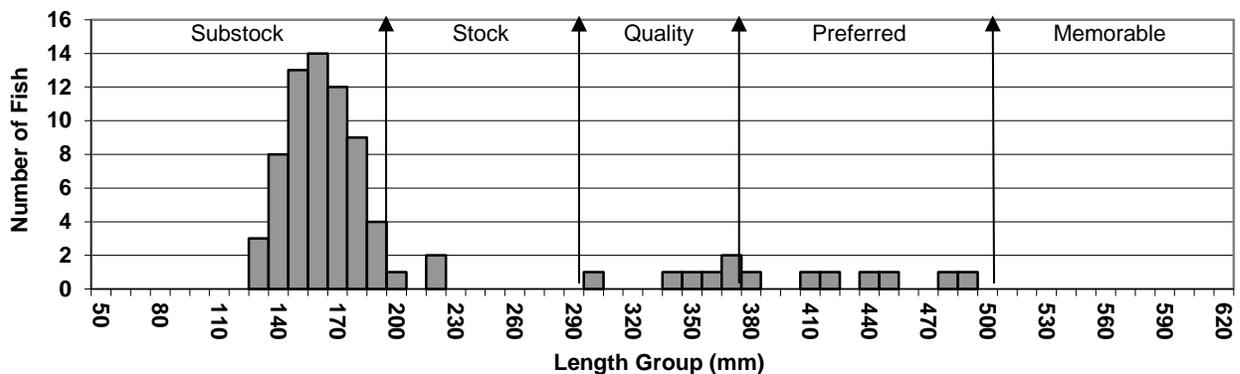


Figure 5. Length frequency histogram for largemouth bass sampled from Roosevelt, Tripp County, 2002.



Bluegill

Bluegills continue to remain one of the top panfish species present in Roosevelt Lake. The trap net CPUE of 12.5 is below the 25.7 from the 2011 survey (Table 13) but just slightly below the 13.9 fifteen year mean (Table 4). The gill net CPUE of 3.5 is up from the 3.0 from the 2011 survey (Table 13) as well as the 1.5 seven year mean (Table 3). The size structure has remained relatively stable for a third survey with the PSD of 53 and an RSD-P of 3 compared to the 71 and 11, respectively, from the 2011 survey. Figures 6 through 11 illustrate the length frequency histograms for the past six surveys. Growth is fine with means only slightly below statewide, regional and SLI means (Table 6). Condition is good with a mean W_r of 109. Table 7 illustrates the changes in yearly CPUE versus the mean CPUE over the history of surveys.

Table 6. Average back-calculated lengths (mm) for each age class of bluegill sampled from Roosevelt, Tripp County, 2013.

Year Class	Age	N	Back-calculated Age													
			1	2	3	4	5	6	7	8	9	10	11			
2011	2	14	47	76												
2010	3	39	40	73	110											
2009	4	10	44	72	108	136										
2008	5	13	40	77	107	139	166									
2006	7	8	47	89	114	138	156	169	177							
2005	8	9	44	82	117	141	154	163	174	182						
2004	9	5	40	68	106	141	161	167	177	187	195					
2002	11	3	42	85	104	138	145	162	173	179	184	189	195			
All Classes		101	43	78	110	139	156	165	175	183	189	189	195			
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 6. Length frequency histogram for bluegill sampled from Roosevelt, Tripp County, 2013.

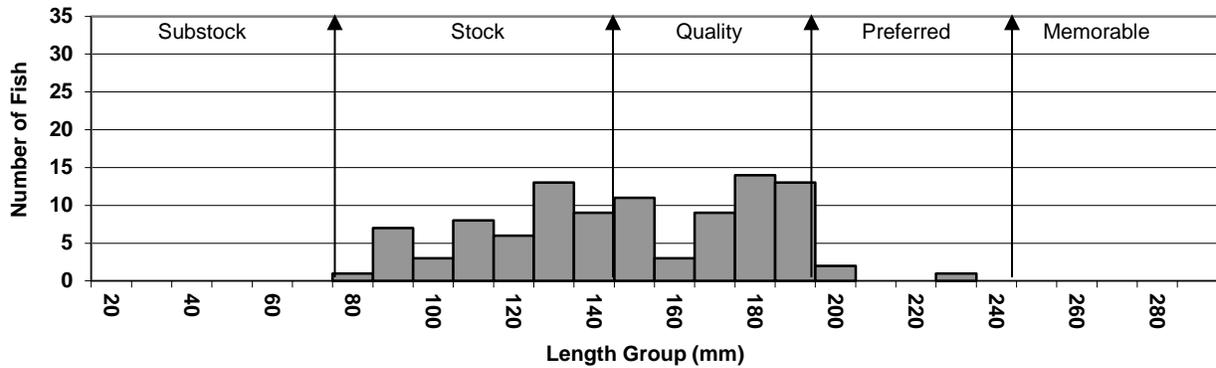


Figure 7. Length frequency histogram for bluegill sampled from Roosevelt, Tripp County, 2011.

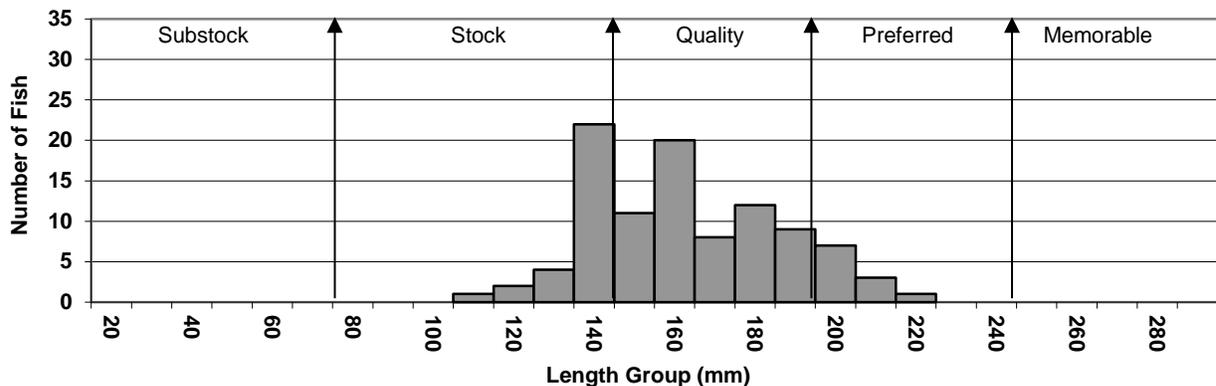


Figure 8. Length frequency histogram for bluegill sampled from Roosevelt, Tripp County, 2008.

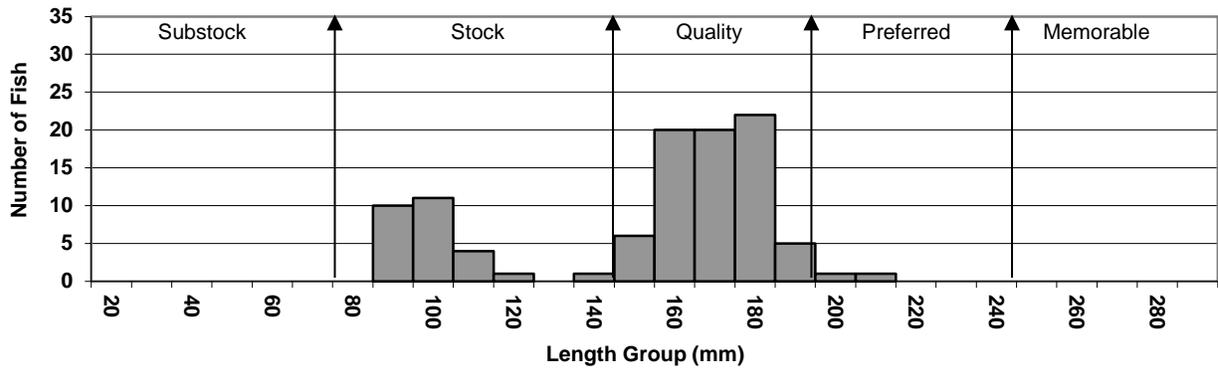


Figure 9. Length frequency histogram for bluegill sampled from Roosevelt, Tripp County, 2005.

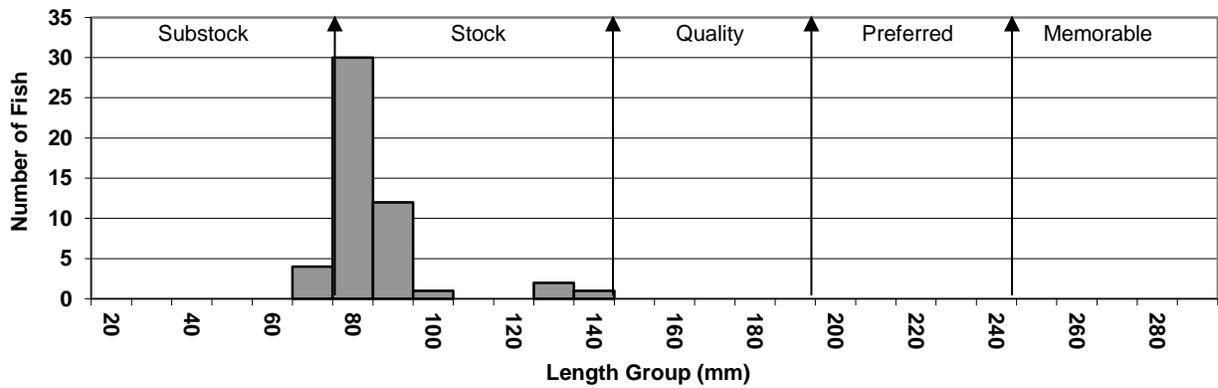


Figure 10. Length frequency histogram for bluegill sampled from Roosevelt, Tripp County, 2002.

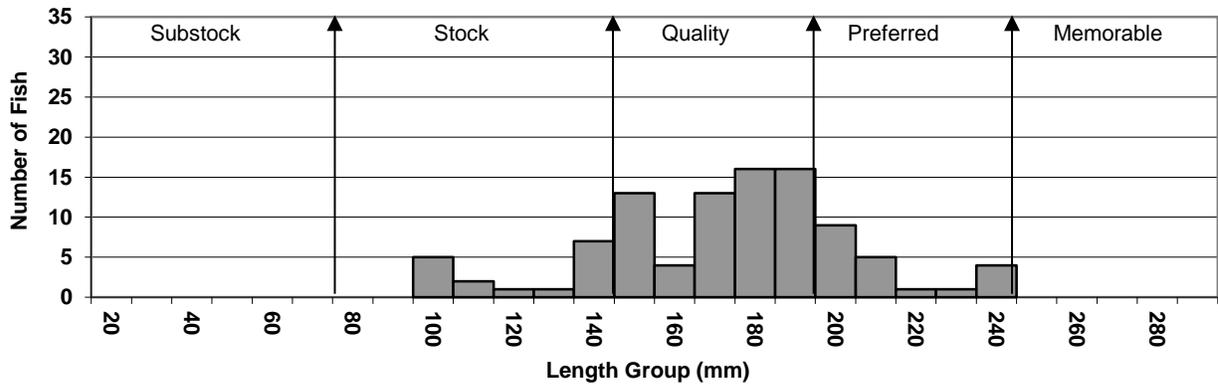


Figure 11. Length frequency histogram for bluegill sampled from Roosevelt, Tripp County, 1999.

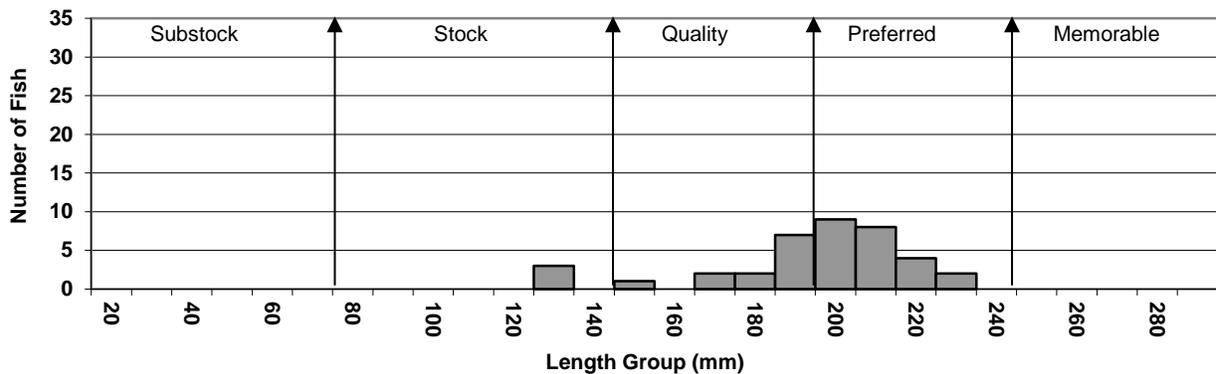
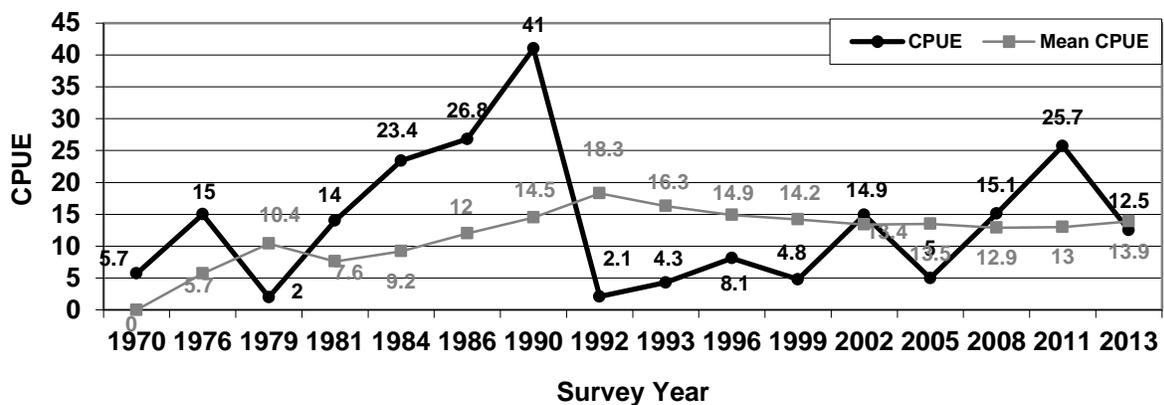


Table 7. Comparison of the trap net CPUE and the population mean CPUE of bluegill during the last sixteen lake surveys from 1970 to the present for Roosevelt Lake, Tripp County.



Yellow Perch

The yellow perch population in Roosevelt Lake appears to have declined since the last survey after many years of being relatively stable. The trap net CPUE of 1.9 is above the 1.0 from the 2011 survey (Table 13) but is below the 7.1 fifteen year mean (Table 4). No fish were sampled in the two gill nets, which is the interesting part that leads to thinking the population may be down. Size structure is good with a PSD of 84 with an RSD-P of 42 compared to the 13 and 0, respectively, from the 2011 survey. Growth is on the slow side with means below statewide, regional and SLI means (Table 8). Condition is good with a mean W_r of 94. Table 9 illustrates the comparison to the trap net CPUE versus the survey mean CPUE and a stable population exists.

Table 8. Average back-calculated lengths (mm) for each age class of yellow perch sampled from Roosevelt Lake, Tripp County, 2013.

Year Class	Age	N	Back-calculated Age							
			1	2	3	4	5	6	7	
2010	3	1	62	91	131					
2009	4	1	94	131	160	205				
2008	5	2	62	94	120	158	190			
2007	6	7	71	102	133	161	180	202		
2006	7	6	89	133	173	229	254	284	305	
All Classes		17	76	110	143	188	208	243	305	
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 12. Length frequency histogram for yellow perch sampled from Roosevelt, Tripp County, 2013.

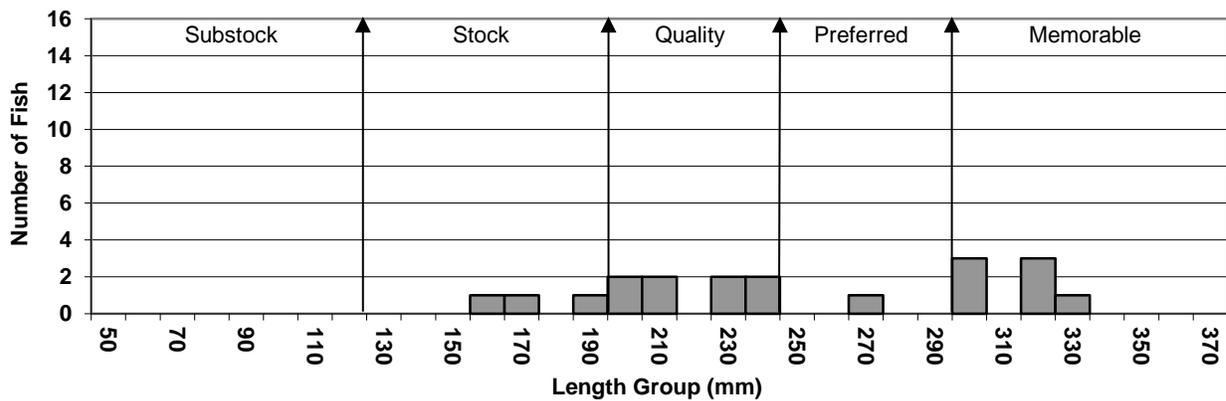


Figure 13. Length frequency histogram for yellow perch sampled from Roosevelt, Tripp County, 2011.

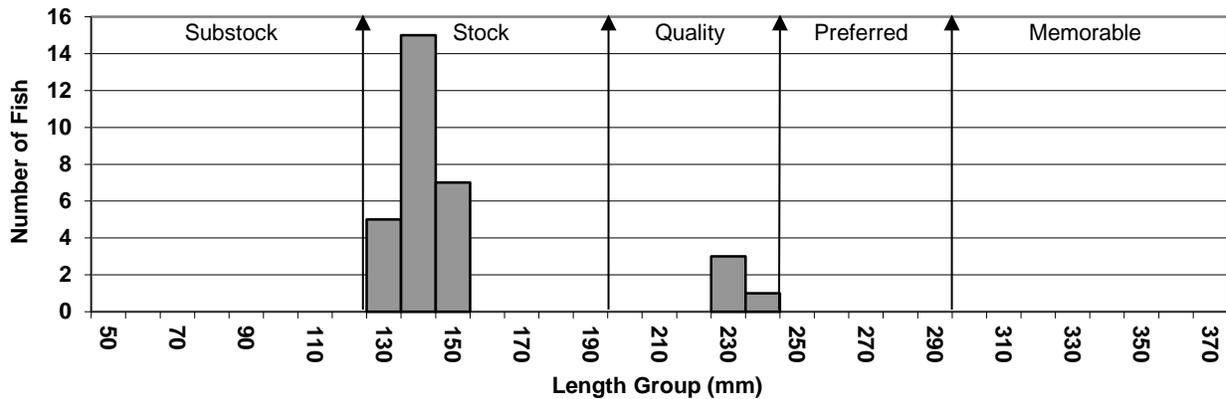


Figure 14. Length frequency histogram for yellow perch sampled from Roosevelt, Tripp County, 2008.

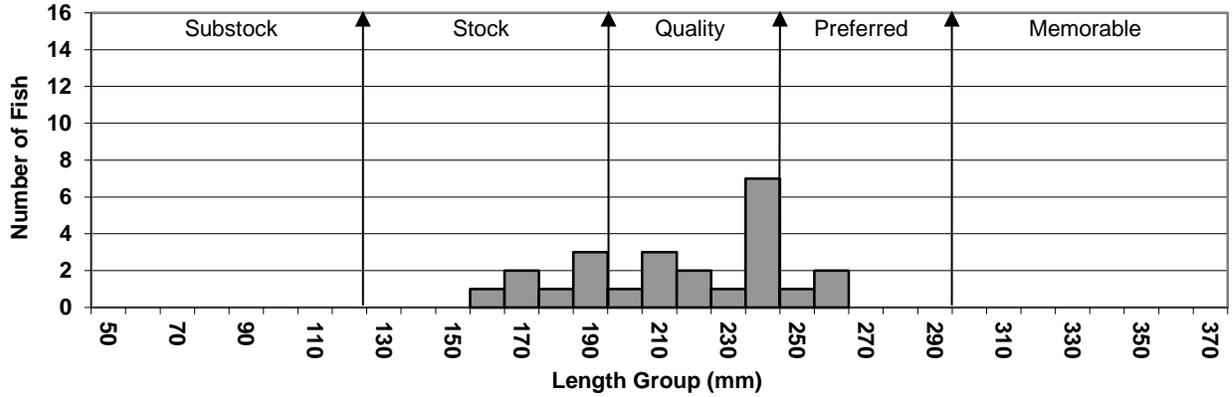


Figure 15. Length frequency histogram for yellow perch sampled from Roosevelt, Tripp County, 2005.

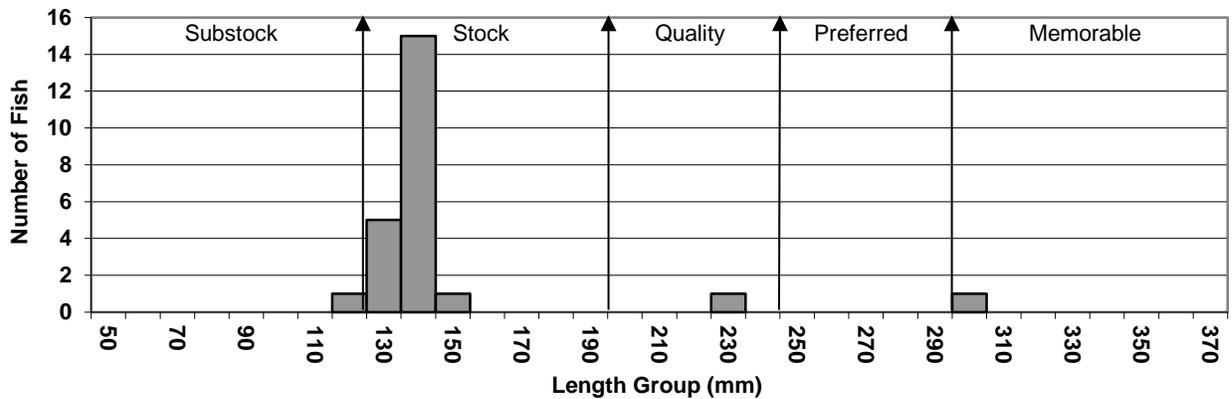


Figure 16. Length frequency histogram for yellow perch sampled from Roosevelt, Tripp County, 2002.

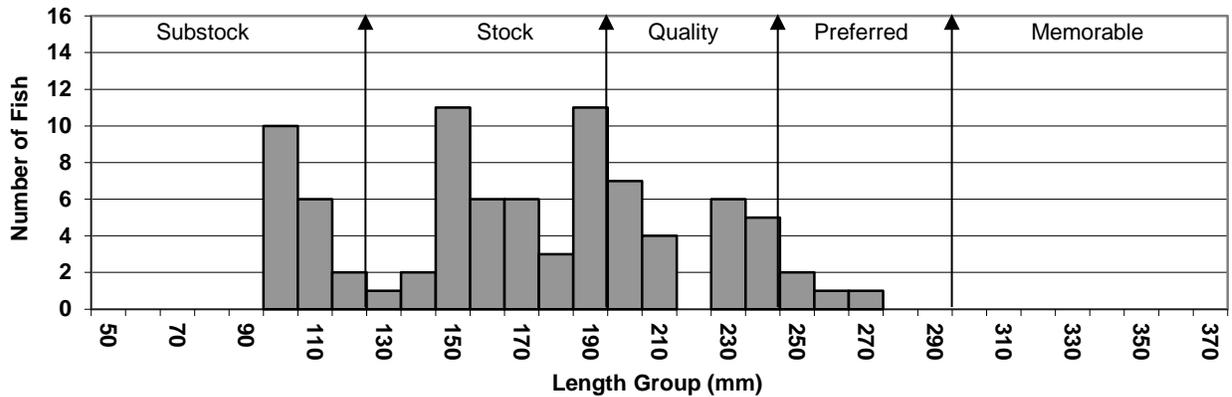
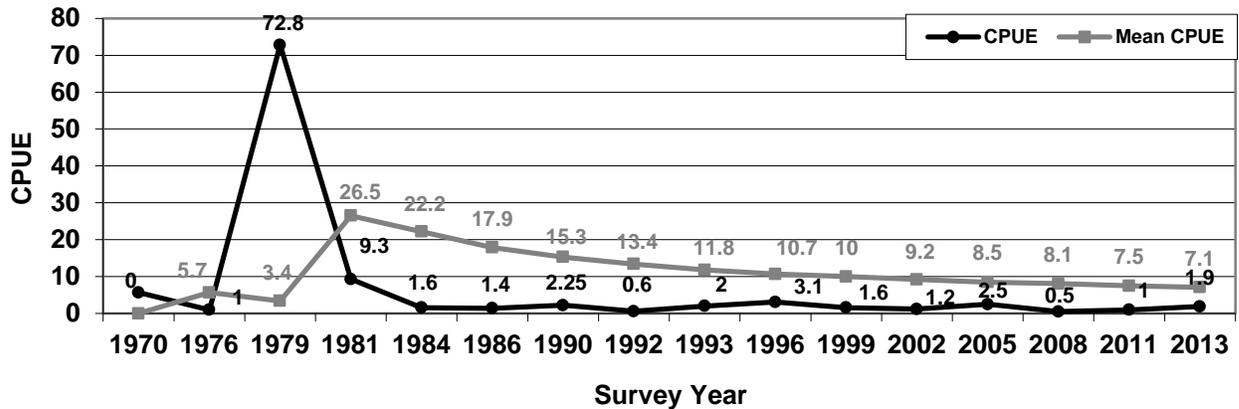


Table 9. Comparison of the trap net CPUE and the population mean CPUE of yellow perch from the last sixteen lake surveys from 1970 to the present for Roosevelt, Tripp County.



Black Crappie

Black crappies have become the dominant panfish species present in Roosevelt Lake this survey. The trap net CPUE of 25.0 is well above the 7.3 from the 2011 survey (Table 13) as well as the 1.5 fifteen year mean (Table 4). Figures 17 through 19 illustrate the length frequency histograms for the past three surveys. Size structure is on the small side with a PSD of 24 and an RSD-P of 0 compared to the 0 and 0, respectively, from the 2011 survey. Growth is slow the means below statewide, regional and SLI means (Table 10). Condition is good with a mean Wr of 108.

Table 10. Average back-calculated lengths (mm) for each age class of black crappie sampled from Roosevelt Lake, Tripp County, 2013.

Year Class	Age	N	Back-calculated Age				
			1	2	3	4	5
2011	2	56	80	128			
2010	3	2	51	76	113		
2009	4	32	80	112	150	182	
2008	5	13	78	117	155	181	197
All Classes		103	72	109	140	182	197
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 17. Length frequency histogram for black crappie sampled from Roosevelt Lake, Tripp County, 2013.

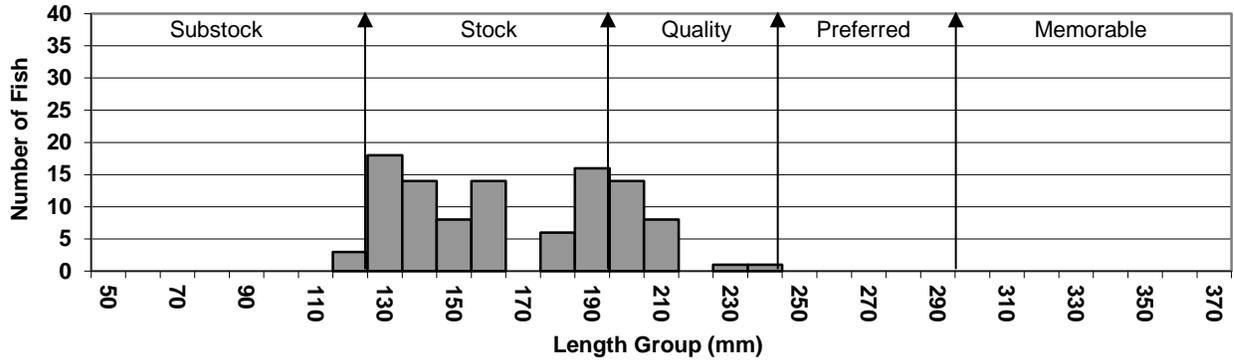


Figure 18. Length frequency histogram for black crappie sampled from Roosevelt Lake, Tripp County, 2011.

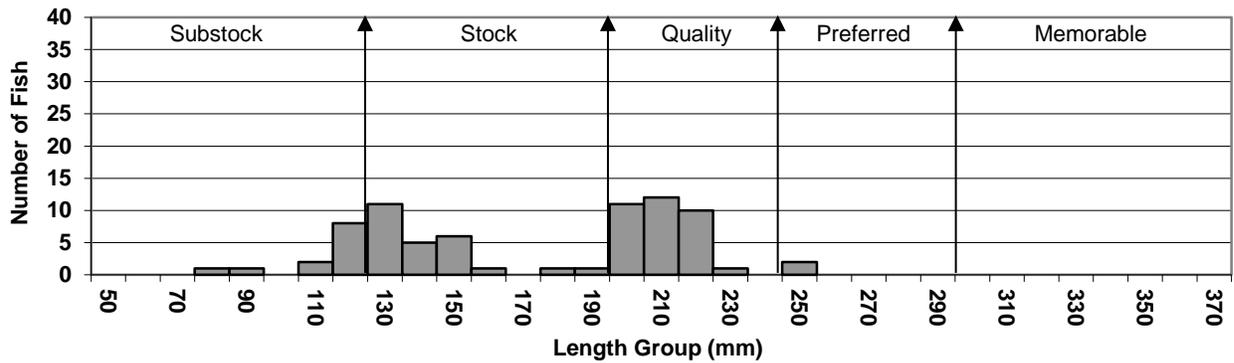
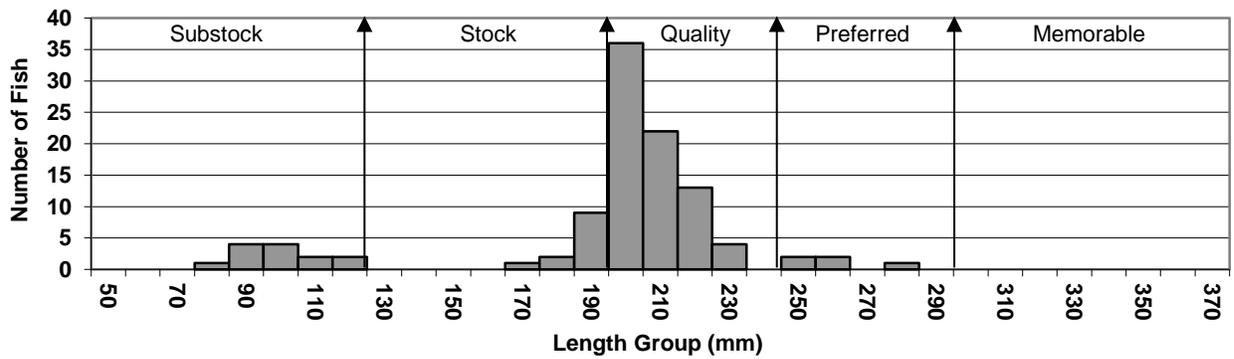


Figure 19. Length frequency histogram for black crappie sampled from Roosevelt Lake, Tripp County, 2008.



Black Bullhead

The black bullhead population continues to remain low and stable. The trap net CPUE of 1.1 is similar to the 1.7 from the 2011 survey (Table 13) but below the 20.3 fifteen year mean (Table 4). The gill net CPUE of 0.5 is below the 2.0 from the 2011 survey (Table 13) as well as the 19.4 seven year mean (Table 3). Figures 20 through 24 illustrate the length frequency histograms for the past five surveys. Size is good with a PSD of 100 and an RSD-P of 91. Condition is good with a mean W_r of 104. Table 11 illustrates the comparison between the CPUE versus the mean CPUE over the survey history and shows that the population was high but is now under control at a manageable level.

Figure 20. Length frequency histogram for black bullhead sampled in Roosevelt, Tripp County, 2013.

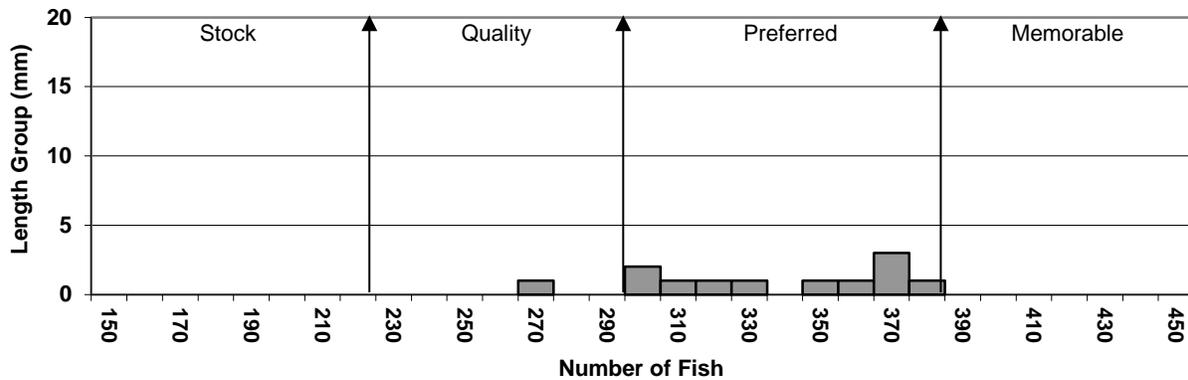


Figure 21. Length frequency histogram for black bullhead sampled in Roosevelt, Tripp County, 2011.

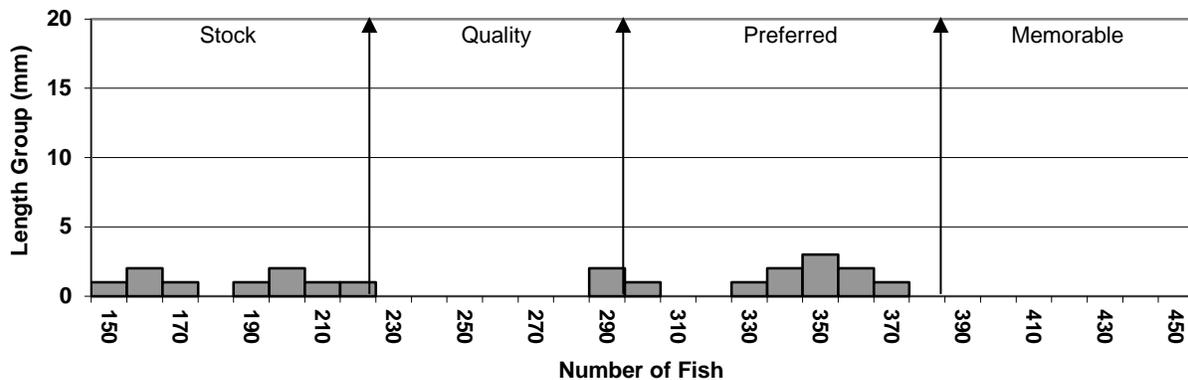


Figure 22. Length frequency histogram for black bullhead sampled in Roosevelt, Tripp County, 2008.

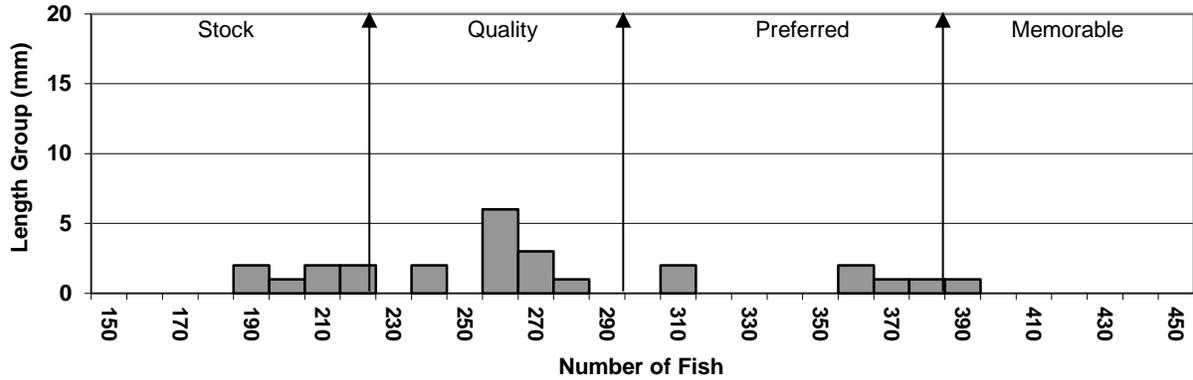


Figure 23. Length frequency histogram for black bullhead sampled in Roosevelt, Tripp County, 2005.

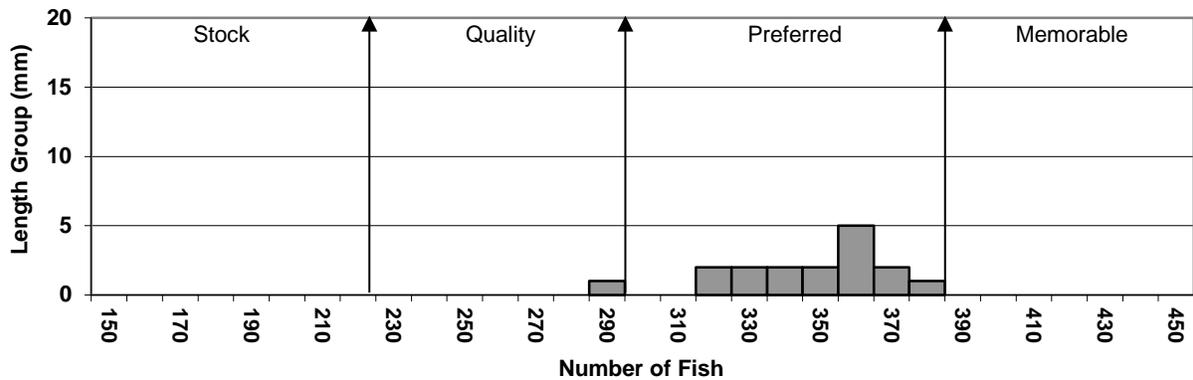


Figure 24. Length frequency histogram for black bullhead sampled in Roosevelt, Tripp County, 2002.

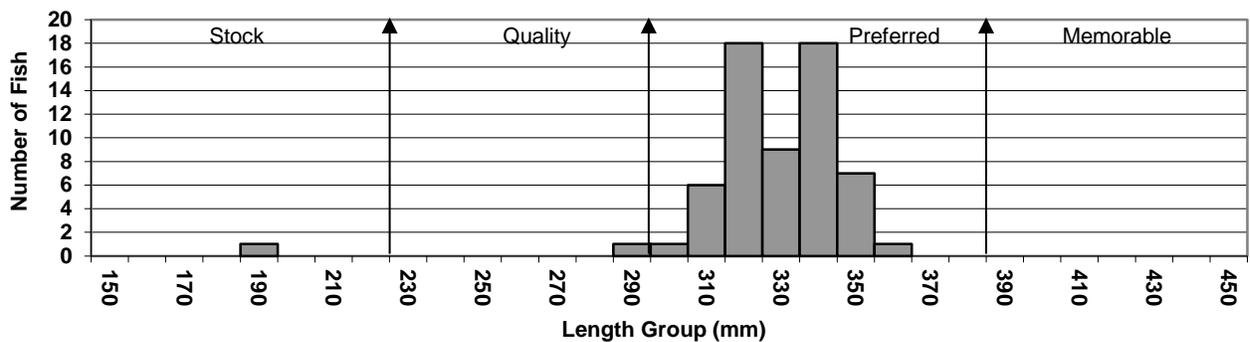
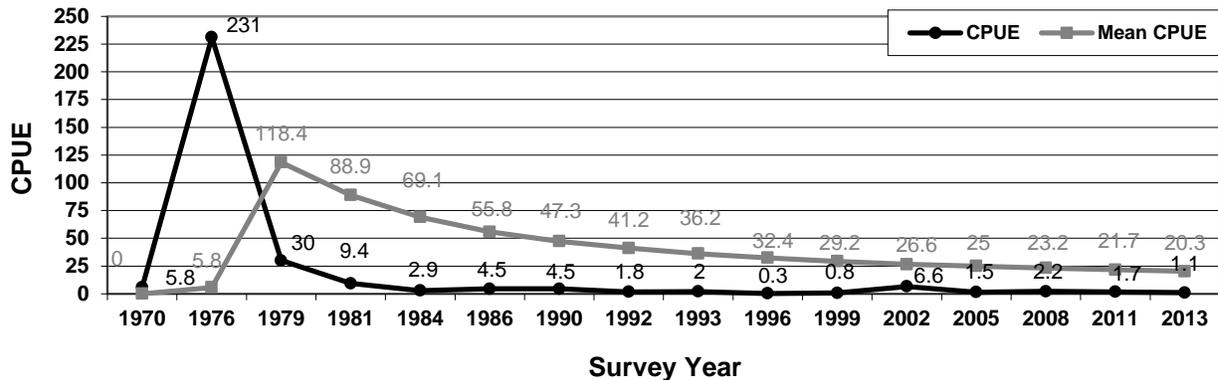


Table 11. Comparison of the trap net CPUE and the population mean CPUE of black bullhead from the last sixteen lake surveys from 1970 to the present for Roosevelt, Tripp County.



Other species

Walleye and northern pike were the only other species sampled this survey. The northern pike catches were up slightly to right on with their respective means for gear type. Walleye numbers appear to be down as not enough were seen during the electrofishing survey to sample. Hopefully continued stockings on an every other year basis will get the walleyes going in the right direction in the near future.

White sucker, green sunfish, hybrid sunfish and golden shiner were the species not sampled that had been in surveys past (Table 13).

Table 12. Stocking records for 1990 to the present for Roosevelt, Tripp County.

Year	Number	Species	Size
1990	3,650	Smallmouth Bass	Fingerling
1991	3,650	Smallmouth Bass	Fingerling
1991	7,300	Walleye	Fingerling
1992	3,650	Smallmouth Bass	Medium Fingerling
1993	1,200	Walleye	Large Fingerling
1998	1,171	Walleye	Fingerling
1998	196	Walleye	Fingerling
2005	1,230	Walleye	Fingerling
2008	845	Walleye	Large Fingerling
2011	1,705	Walleye	Large Fingerling
2013	2,356	Walleye	Large Fingerling

RECOMMENDATIONS

1. Resurvey with trap nets, gill nets, and electrofishing in 2016.
2. Stock walleye fingerlings every other year to maintain the fishery.

Table 13. Gill net (GN), trap net (TN), and electrofishing (EF) CPUE for all fish species sampled in Roosevelt since the last chemical rehabilitation in 1959.

Species	1970	1976	1979	1981	1984	1986	1990	1992	1993	1996	1999	2002	2005	2008	2011	2013
BLB (GN)	--	100.0	--	27.0	--	--	--	--	--	--	--	4.0	1.0	2.0	2.0	0.5
BLB (TN)	5.8	231.0	30.0	9.4	2.9	4.5	4.5	1.8	2.0	0.3	0.8	6.6	1.5	2.2	1.7	1.1
BLC (GN)	--	--	--	--	--	--	--	--	--	--	--	7.0	2.5	5.0	9.5	1.0
BLC (TN)	--	--	--	--	--	--	--	0.1	--	--	2.3	1.1	1.1	11.0	7.3	25.0
YEP (GN)	--	28.0	--	46.0	8.0	--	--	--	--	--	--	80.0	4.0	9.5	15.5	--
YEP (TN)	5.7	1.0	72.8	9.3	1.6	1.4	2.3	0.6	2.0	3.1	1.6	1.2	2.5	0.5	1.0	1.9
YEP (EF)	--	--	--	--	--	10.0	--	--	--	--	--	--	--	--	--	--
LMB (GN)	--	--	--	1.0	--	--	--	--	--	--	--	7.0	3.5	0.5	--	0.5
LMB (TN)	0.8	--	--	0.3	0.1	0.3	0.4	0.1	--	--	0.3	--	0.1	--	0.1	0.7
LMB (EF)	--	--	--	--	--	13.0	--	--	--	--	--	112.5	52.0	130.0	126.0	194.0
NOP (GN)	--	4.0	--	1.0	--	--	--	--	--	--	--	5.0	2.0	2.5	4.5	4.5
NOP (TN)	3.1	1.3	2.9	0.4	1.1	1.0	0.6	--	0.1	1.0	1.9	0.8	1.2	0.3	0.1	0.7
NOP (EF)	--	--	--	--	--	3.0	--	--	--	--	--	--	--	--	--	--
WHS (GN)	--	10.0	--	2.0	--	--	--	--	--	--	--	--	--	--	--	--
WHS (TN)	--	3.0	0.8	0.5	0.4	--	--	--	--	--	--	--	--	--	--	--
WAE (EF)	--	--	--	--	--	--	--	--	--	--	--	3.0	--	--	1.0	--
WAE (GN)	--	--	--	--	--	--	--	--	--	--	--	8.0	--	1.0	1.5	0.5
WAE (TN)	--	--	--	--	0.3	0.1	--	--	--	0.4	0.4	--	--	0.2	0.1	0.3
BLG (GN)	--	--	--	--	--	--	--	--	--	--	--	7.0	--	0.5	3.0	3.5
BLG (TN)	5.7	15.0	2.0	14.0	23.4	26.8	41.0	2.1	4.3	8.1	4.8	14.9	5.0	15.1	25.7	12.5
BLG (EF)	--	--	--	--	--	9.0	--	--	--	--	--	--	--	--	--	--
GSF (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GSF (TN)	--	--	--	--	0.4	--	0.1	0.5	--	--	0.1	0.1	--	0.1	0.8	--
GSF (EF)	--	--	--	--	--	1.0	--	--	--	--	--	--	--	--	--	--
HYB (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
HYB (TN)	--	--	--	--	--	0.8	--	--	--	--	--	--	--	--	--	--
GOS (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.5	--
GOS (TN)	--	--	--	--	--	--	0.3	--	0.4	--	--	--	--	--	--	--

BLB-Black Bullhead, BLC-Black Crappie, YEP-Yellow Perch, LMB-Largemouth Bass, NOP-Northern Pike, WHS-White Sucker, WAE-Walleye, BLG-Bluegill, GSF-Green Sunfish, HYB-Hybrid Sunfish, GOS-Golden Shiner