

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

2102-F-21-R-47

Name: McGee Lake

County(ies): Corson

Legal Description: T23N-R23W-Sec. 36

GPS: 45°54'37.00"N 101°12'54.45"W

Location from nearest town: 5 miles east, ¼ mile south and ½ mile east of McIntosh

Date of present survey: July 15-17, 2013 (netting); September 17, 2014 (electrofishing)

Date of last survey: July 6-8, 2010 (netting); September 28, 2010 (electrofishing)

Most recent lake management plan: F-21-R-43 (January 1, 2011 to December 31, 2015)

Management classification: Warmwater Permanent

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

PHYSICAL DATA

Surface Area: 36.5 acres

Watershed: 4,200 acres

Maximum Depth: 20 feet

Mean Depth: 10 feet

Lake elevation at time of survey (field observations): Full

Contour map: No

Date: NA

Ownership of lake and adjacent lakeshore properties:

McGee Lake is a 36.5-acre impoundment located 5.5 miles east and 1 mile south of McIntosh in north central Corson County. The earthen dam and trickle tube overflow that created the lake was constructed by the Works Progress Administration (WPA) in 1934. The dam was constructed within a section of land owned by South Dakota School and Public Lands. The State of South Dakota remains the present owner of the lake and surrounding land. The South Dakota Department of Game, Fish and Parks applied for, and received, vested water rights for 90 acre/feet of water annually for public recreation on August 15, 1960. Fisheries management at McGee Lake is conducted by the South Dakota Department of Game, Fish and Parks.

Watershed condition with percentages of land use types:

The watershed for McGee Lake is 4,200 acres or about 6.5 square miles. The watershed consists of approximately 80% native grasses utilized as pastureland. The remaining 20% is cultivated cropland, farmyards and residences. The immediate shoreline is pasture consisting of clay and gumbo covered by short native grasses.

Fishing access:

There is ample shore fishing opportunities around the shoreline. There is also a boat ramp for water access, but was underwater at the time of the survey. Summer fishing maybe hampered in some areas due to dense vegetation. Ample opportunity exists for ice access.

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

The access trail is just a dirt path through a pasture that could become impassable during wet periods. The boat ramp was underwater at the time of survey and condition may be degraded or unusable when water recedes. The dam and spillway are in good condition.

Field observations of aquatic vegetation condition:

Emergent and submergent vegetation surrounds the entire lake except along the dam grade with the heaviest amounts located in the upper arms of the lake. Emergents consist of cattails and rushes. Submergents consist of a thick mix of many species of pondweeds and milfoil.

CHEMICAL DATA

Field observations of water quality and pollution problems:

No pollution problems were evident at the time of the survey, although siltation from the watershed is evident in the upper ½ of the lake. Water clarity was good with a secchi disc reading of 7 feet. Other water quality characteristics were measured in the field on July 15, 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 McGee Lake, Corson County, July 6, 2010.

Surface	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	74.5	4.0	26.4	208	149	7.94	532	267	0.26	-175.6	7
A	16.3	74.0	4.5	29.6	263	144	8.31	541	270	0.26	-155.7	

BIOLOGICAL DATA

Methods:

McGee Lake was sampled on July 15-17, 2013, using ten overnight trap net sets. The trap nets have 3ft x 5ft frames, 60ft leads, and ¾ inch knotted mesh. No experimental gill nets or electrofishing was done during this survey season. On the evening of September 17, 2014, McGee 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 10 amps to electrofish the lake that had a conductivity of 355µS/cm with a water temperature of 58.0°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 McGee Lake, Corson County, July 15-17, 2013.

Species	#	%	CPUE	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Black Bullhead	927	95.8	92.7	± 27.1	245.2	63	2	84
Black Crappie	19	2.0	1.9	± 0.6	19.4	100	95	109
Northern Pike	15	1.5	1.7	± 0.5	2.4	86	57	83
Yellow Perch	7	0.7	0.7	± 0.5	1.9	29	14	106

* Thirteen year mean (1972, 1977, 1981, 1984, 1988, 1990, 1993, 1996, 1998, 2001, 2004, 2007, 2010)

Electrofishing Catch

Table 3. Total catch from four, ten-minute runs of fall nighttime electrofishing on McGee Lake, Corson County, September 17, 2014.

Species	#	%	CPUE	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Largemouth Bass	40	100	60.0	± 18.8	27.6	50	0	109

* Five year mean (1990, 2001, 2004, 2007, 2010)

Largemouth Bass

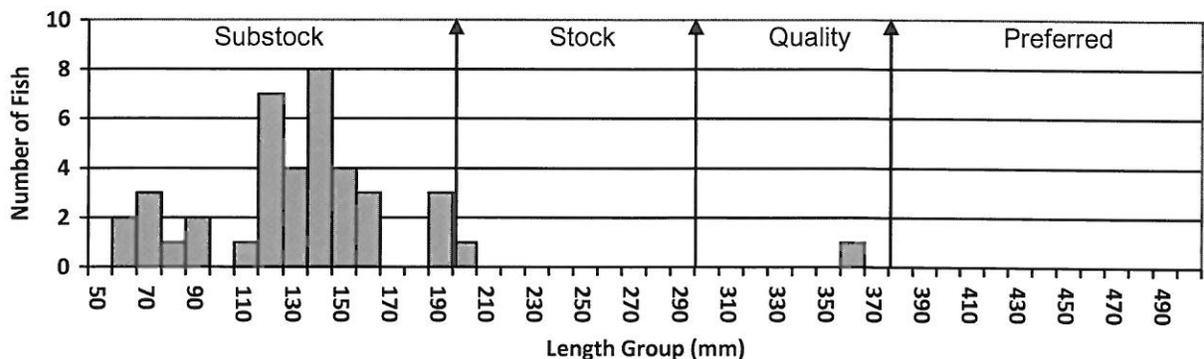
McGee Lake continues to contain a largemouth bass population. The CPUE for electrofishing was 60.0 fish per hour which is above the 22.8 from the 2010 survey (Table 8) as well as the 27.6 five year mean (Table 3). Figure 1 illustrates the length frequency histogram for the fish sampled this survey. And it can be seen that the population appears to be dominated by very young fish. The interesting thing about this is that there has to be several adults in the population that were not sampled to produce all of these young fish as no stockings have been done since 2005 (Table 7). The main factor limiting the effectiveness of the electrofishing this survey was the large amount of submergent vegetation still present at the time of the survey. Growth appears to be good with means right around statewide, regional and SLI means (Table 4). Condition is good with a mean W_r of 109.

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

Year Class	Age	N	Back-calculated Age			
			1	2	3	4
2014	0	6				
2013	1	29	72			
2012	2	2	65	124		
2010	4	1	100	193	249	305
All Classes		38	79	159	249	305
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 McGee Lake, Corson County, 2014.



Black Bullhead

The black bullhead population has increased for the second straight survey. The CPUE of 92.7 is above the 51.4 from the 2010 survey (Table 8), but is still below the 245.2 thirteen year mean (Table 2). Figures 2 through 6 illustrate the length frequency histograms for the past five surveys. Size structure has increased slightly over the past survey. The PSD of 63 with an RSD-P of 2 is slightly above the 31 and 3, respectively, from the 2010 survey. The population used to be much more balanced with fish spread out throughout the size ranges. A reduction in the predator species may be the main reason for this change. Condition is fine with a mean Wr of 84.

Figure 2. Length frequency histogram for black bullhead sampled from McGee Lake, Corson County, 2013.

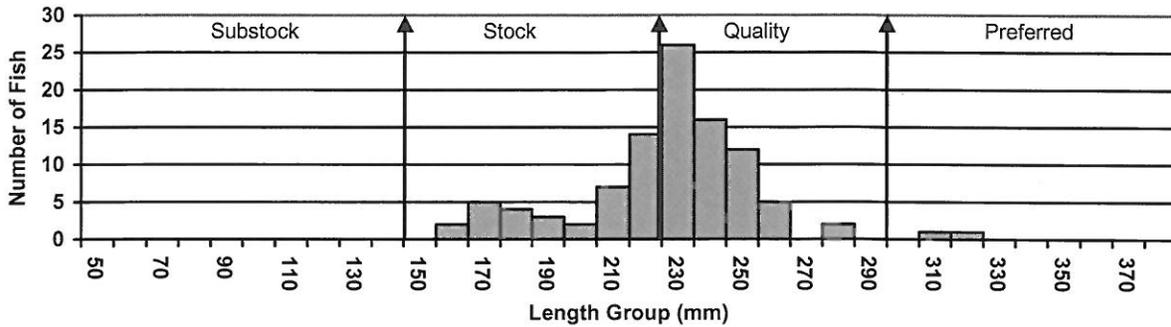


Figure 3. Length frequency histogram for black bullhead sampled from McGee Lake, Corson County, 2010.

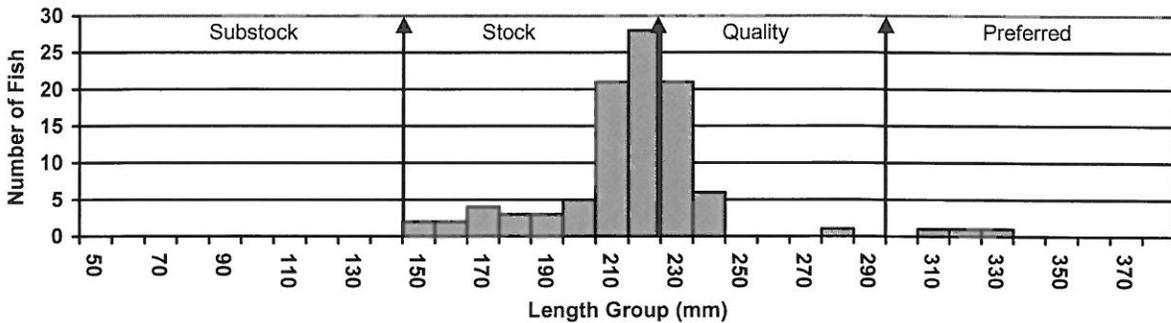


Figure 4. Length frequency histogram for black bullhead sampled from McGee Lake, Corson County, 2007.

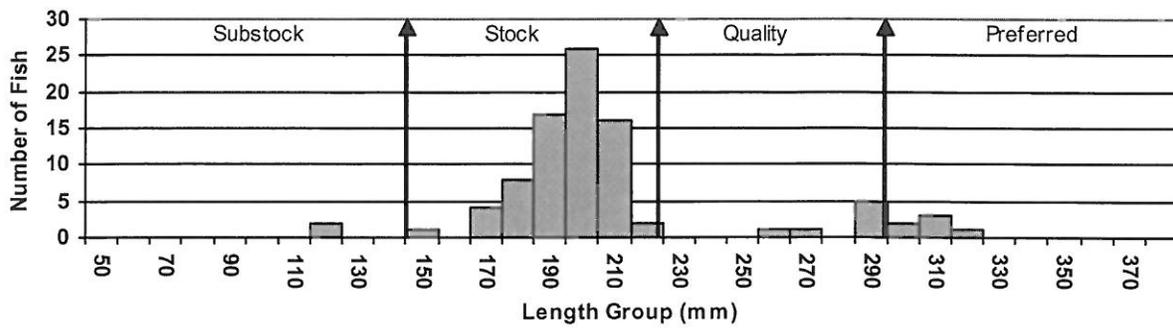


Figure 5. Length frequency histogram for black bullhead sampled from McGee Lake, Corson County, 2004.

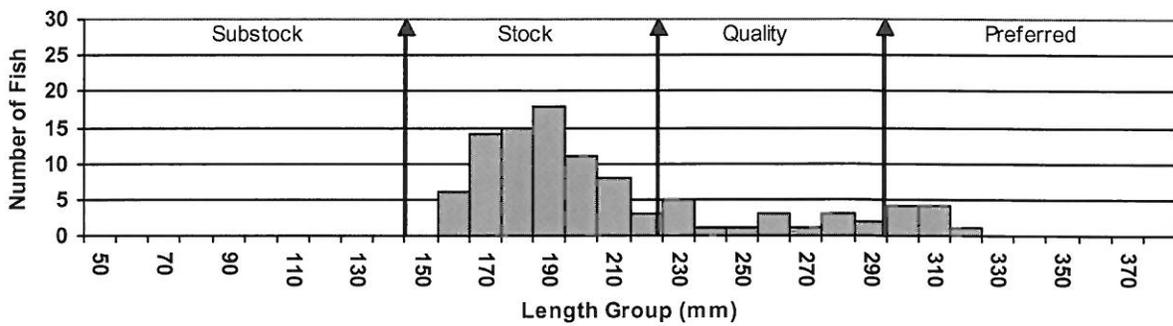
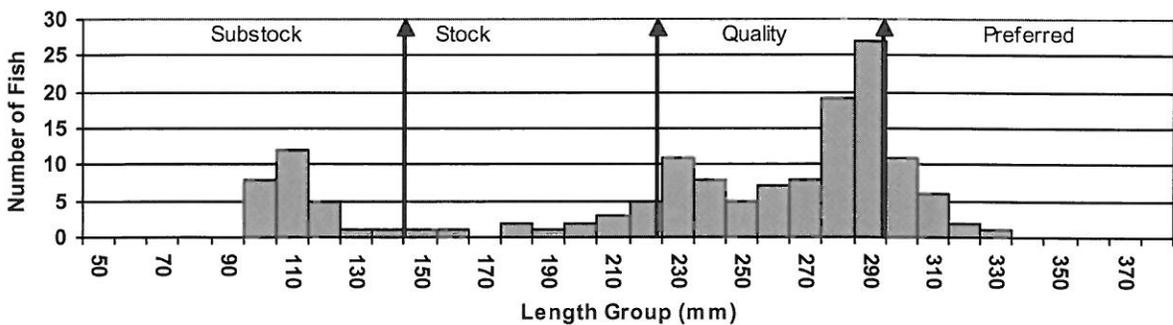


Figure 6. Length frequency histogram for black bullhead sampled from McGee Lake, Corson County, 2001.



Black Crappie

McGee continues to contain a small black crappie population. The CPUE of 1.9 is slightly below the 2.4 from the 2010 survey (Table 8), but significantly below the 19.4 thirteen year mean (Table 2). Figures 7 and 8 illustrate the length frequency histograms for the past two surveys. The group of young fish has moved its way up the size structure. The biggest concern is that it appears no new year classes have been being produced the last couple years to help this population increase. Growth rates are good with means right on with statewide, regional and SLI means (Table 5). Condition is good with a mean Wr of 109. This black crappie population could be a good predator species to keep the bullhead numbers in check if their density was higher. A stocking may need to be done to help this population out.

Table 5. Average back-calculated lengths (mm) for each age class of black crappie sampled from McGee Lake, Corson County, 2013.

Year Class	Age	N	Back-calculated Age												
			1	2	3	4	5	6	7	8	9	10			
2008	5	2	77	144	208	263	274								
2007	6	4	86	159	205	230	249	263							
2006	7	4	86	143	194	225	249	262	272						
2005	8	6	86	138	192	221	242	253	269	277					
2004	9	1	80	135	179	206	223	240	257	265	273				
2003	10	1	79	131	171	189	206	233	246	258	266	271			
All Classes		18	82	142	191	222	240	250	261	267	270	271			
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 7. Length frequency histogram for black crappie sampled from McGee Lake, Corson County, 2013.

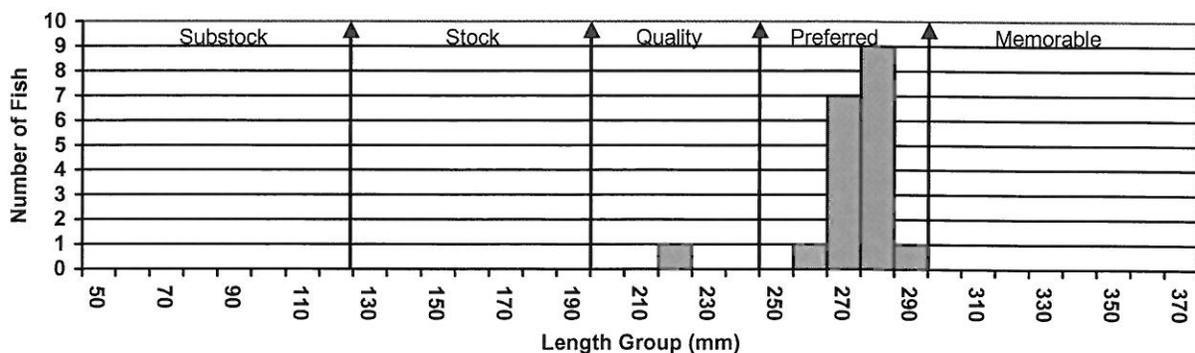
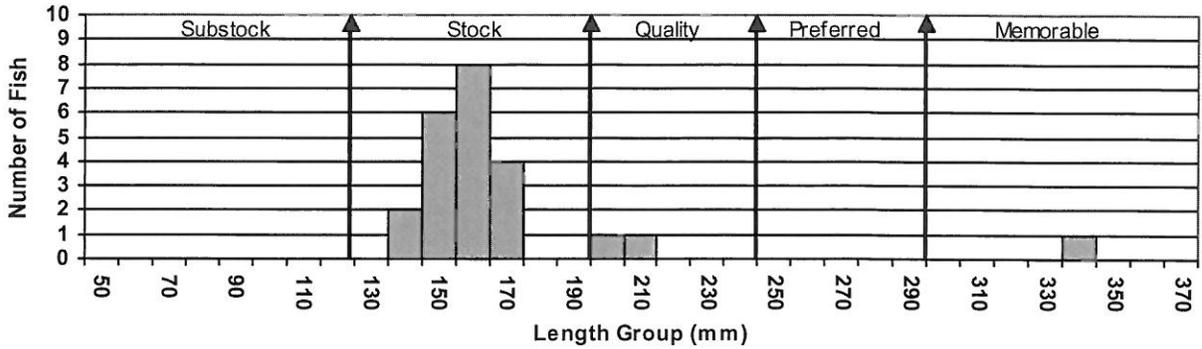


Figure 8. Length frequency histogram for black crappie sampled from McGee Lake, Corson County, 2010.



Yellow Perch

McGee Lake also contains a very small yellow perch population. The CPUE of 0.7 fish per net night is below the 1.7 from the 2010 survey (Table 8) as well as the 1.9 thirteen year mean (Table 2). Figure 9 and 10 illustrates the length frequency histograms for the fish sampled the past two surveys. Growth for the fish sampled is good with means right around statewide, regional and SLI means (Table 6). Condition is good with a mean Wr of 106.

Table 6. Average back-calculated lengths (mm) for each age class of yellow perch sampled from McGee Lake, Corson County, 2013.

Year Class	Age	N	Back-calculated Age				
			1	2	3	4	5
2011	2	5	70	136			
2010	3	1	78	115	177		
2008	5	1	88	146	189	239	261
All Classes		7	78	132	183	239	261
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 9. Length frequency histogram for yellow perch sampled from McGee Lake, Corson County, 2013.

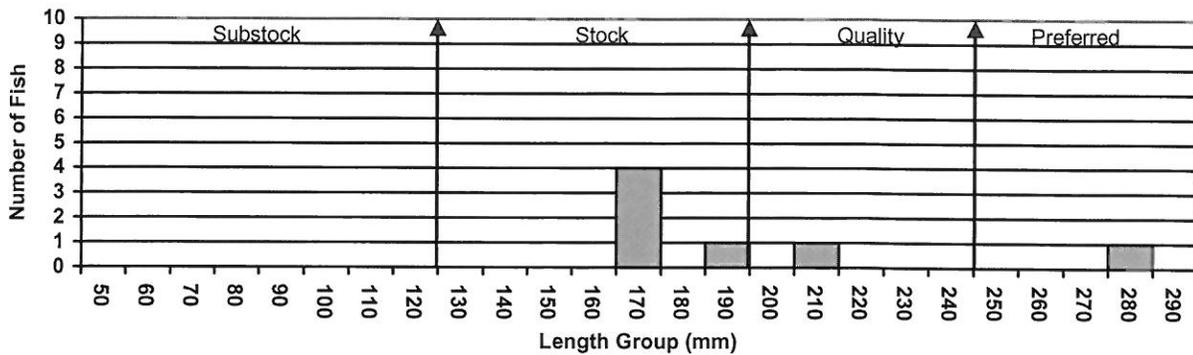
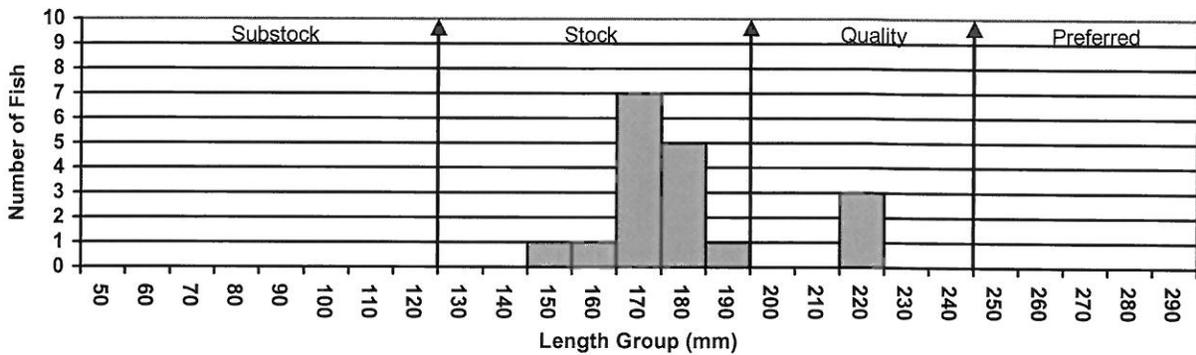


Figure 10. Length frequency histogram for yellow perch sampled from McGee Lake, Corson County, 2010.



Other species

Northern pike was the only other species sampled this survey. The CPUE of 1.7 is above the 0.7 from the 2010 survey (Table 8), but is slightly below the 2.4 thirteen year mean (Table 2). Figure 11 illustrates the length frequency histogram for the fish sampled this survey. Condition is fine with a mean Wr of 83.

White crappie, largemouth bass, walleye, green sunfish and golden shiner were the species not sampled that had been in surveys past (Table 8). The largemouth bass population should have been surveyed to monitor what is going on but an early fall blizzard cooled water temperatures to far that fish moved off shore and made electrofishing ineffective.

Figure 11. Length frequency histogram for northern pike sampled from McGee Lake, Corson County, 2013.

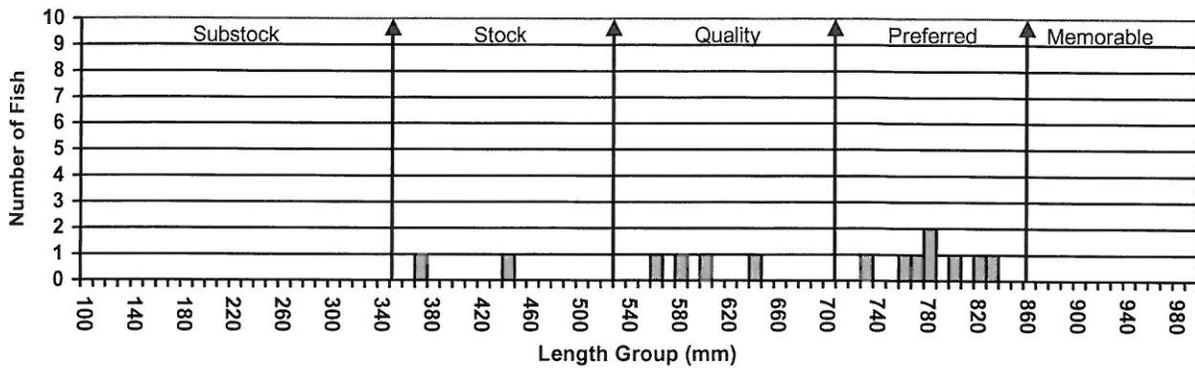


Table 7. Stocking records for the last ten years for McGee Lake, Corson County.

Year	Number	Species	Size
1997	3,500	Largemouth Bass	Fingerling
1997	120	Northern Pike	Adult
1998	70	Largemouth Bass	Adult
2001	3,500	Largemouth Bass	Fingerling
2002	4,530	Largemouth Bass	Fingerling
2005	100	Largemouth Bass	Juvenile

RECOMMENDATIONS

1. Resurvey in 2016 to monitor the fish populations in the lake.
2. Stock fingerling and adult largemouth bass to supplement the existing population to provide a sufficient predator to control the black bullhead population.
3. Stock adult black crappie to supplement the existing and aging population.

Table 8. Gill net (GN), trap net (TN) and electrofishing (EF) CPUE for all fish species sampled in McGee Lake, Corson County since survey records began.

Species	1972	1977	1981	1984	1988	1990	1993	1996	1998	2001	2004	2007	2010	2013	2014
BLB (GN)	--	138.0	79.0	--	--	--	--	--	--	--	--	--	--	--	--
BLB (TN)	0.7	355.1	413.2	270.3	208.8	29.0	14.0	1062.5	518.0	112.5	143.0	8.9	51.4	92.7	--
BLC (GN)	--	2.0	--	--	--	--	--	--	--	--	--	--	--	--	--
BLC (TN)	0.6	4.3	19.6	7.7	169.4	9.8	6.6	12.3	16.9	2.0	0.6	0.5	2.4	1.9	--
WHC (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
WHC (TN)	--	--	0.4	--	--	--	--	--	--	--	--	--	--	--	--
YEP (GN)	--	2.0	--	--	--	--	--	--	--	--	--	--	--	--	--
YEP (TN)	0.1	2.1	0.6	0.6	8.0	1.1	--	1.6	1.6	6.9	0.1	0.4	1.7	0.7	--
LMB (EF)	--	--	--	--	--	1.0	--	--	--	61.5	30.0	22.8	22.8	--	60.0
LMB (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
LMB (TN)	--	--	--	0.1	1.5	--	--	--	--	0.1	--	--	--	--	--
NOP (GN)	--	3.0	2.0	--	--	--	--	--	--	--	--	--	--	--	--
NOP (TN)	9.4	2.4	0.3	1.7	8.2	0.5	0.1	2.3	1.1	2.3	0.3	1.4	0.7	1.7	--
WAE (GN)	--	1.0	2.0	--	--	--	--	--	--	--	--	--	--	--	--
WAE (TN)	--	0.8	0.8	0.2	0.1	--	--	--	--	--	--	--	--	--	--
GSF (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GSF (TN)	--	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--
GOS (GN)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GOS (TN)	--	--	--	0.03	--	--	--	--	--	--	--	--	--	--	--

BLB – Black Bullhead, BLC – Black Crappie, WHC – White Crappie, YEP – Yellow Perch, LMB – Largemouth Bass, NOP – Northern Pike, WAE – Walleye, GSF – Green Sunfish, GOS – Golden Shiner