

Watershed condition with percentages of land use types:

The watershed of Eagle Butte is approximately 6,400 acres or 10 square miles which is mainly located to the south and east of the lake and comprised of privately owned agricultural land, grassland and lands held in trust by the Bureau of Indian Affairs and Cheyenne River Sioux Tribe. Land utilization in approximately 40% cropland, 58% pasture, hay land, or land enrolled in the Conservation Reserve Program, and 2% roads, farms and the City of Eagle Butte.

Fishing access:

Eagle Butte has a new boat ramp, boat dock, toilet and parking area for water fishing. There are also some opportunities for shore fishing around the lake. Shore fishing may become tough due to high amounts of vegetation during the open water periods. Also there is ample ice fishing opportunities.

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

The dam grade and spillway are in good condition. A new boat ramp, dock, parking area, access trail and toilet are all new.

Field observations of aquatic vegetation condition:

Submergent vegetation is found around most of the shoreline and consists of a variety of pondweed species. Emergent vegetation consists of a mixture of cattails, rushes and sedges and is found around most of the shoreline.

CHEMICAL DATA

Field observations of water quality and pollution problems:

No pollution problems were evident at the time of the survey. Water clarity was excellent with a secchi disc reading of 11.0 feet. Other water quality characteristics were measured in the field on June 9, 2014, using a HACH water quality test 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 Eagle Butte Lake, Dewey County, June 9, 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	65.60	4.77	41.8	237	609	8.09	1930	965	0.99	185.6	11.0
A	19.5	65.63	3.60	43.8	174	646	8.00	1954	977	1.00	-184.7	

BIOLOGICAL DATA

Methods:

Eagle Butte Lake was sampled on June 9-11, 2014, with ten overnight trap net sets. The trap nets have 3ft x 5ft frames, 60ft leads, and 3/4in knotted mesh. No experimental gill nets were set during this year's survey. On the evening of September 15, 2014, Eagle Butte Lake was electrofished for 60 minutes (6-ten minute transects) to sample the largemouth bass population. The boat was set up with a 120 pulses per second of DC current at 340 volts with around 20 amps to electrofish the lake that had a conductivity of 1956 $\mu\text{S}/\text{cm}$ with a water temperature of 58.6°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 Eagle Butte Lake, Dewey County, July 11-13, 2011.

Species	#	%	CPUE	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Black Crappie	419	46.6	41.9	± 17.0	3.0	54	0	105
Bluegill	278	30.9	27.8	± 5.4	2.9	91	1	105
Black Bullhead	120	13.3	12.0	± 3.7	163.6	100	54	101
Yellow Perch	79	8.8	7.9	± 3.9	1.3	94	51	87
Largemouth Bass	3	0.4	0.3	± 0.3	0.6	--	--	96

* Eight years (1978, 1988, 1992, 1996, 1999, 2002, 2009, 2011)

Electrofishing Catch

Table 3. Total catch from six, ten-minute runs of fall nighttime electrofishing on Eagle Butte Lake, Dewey County, September 15, 2014.

Species	#	%	CPUE	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Largemouth Bass	70	100	70.0	± 16.4	19.0	26	17	101

* Two years (1988, 1999)

Bluegill

Bluegills have become the second most abundant species present in Eagle Butte Lake. The CPUE of 27.8 is above the 15.4 from the 2011 survey (Table 9) as well as the 2.9 eight year mean (Table 2). Bluegills are relatively a new species sampled in Eagle Butte. Records have only one occurrence in 1988 other than the last three surveys (Table 9). Figures 1 through 3 illustrate the length frequency histograms for the last three surveys. It can be seen that the sizes have increased over that span. Growth is good with means right on with statewide, regional and SLI means (Table 4). Condition is good with a mean Wr of 105.

Table 4. Average back-calculated lengths (mm) for each age class of bluegill sampled from Eagle Butte Lake, Dewey County, 2014.

Year Class	Age	N	Back-calculated Age					
			1	2	3	4	5	6
2011	3	36	43	99	149			
2010	4	60	49	104	165	177		
2009	5	3	56	136	175	186	193	
2008	6	2	43	81	104	161	176	191
All Classes		101	48	105	148	175	184	191
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 1. Length frequency histogram for bluegill sampled from Eagle Butte Lake, Dewey County, 2014.

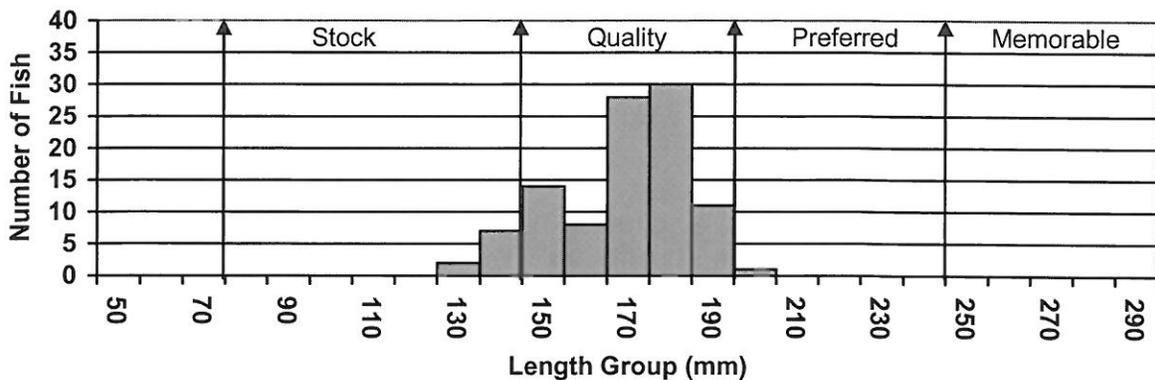


Figure 2. Length frequency histogram for bluegill sampled from Eagle Butte Lake, Dewey County, 2011.

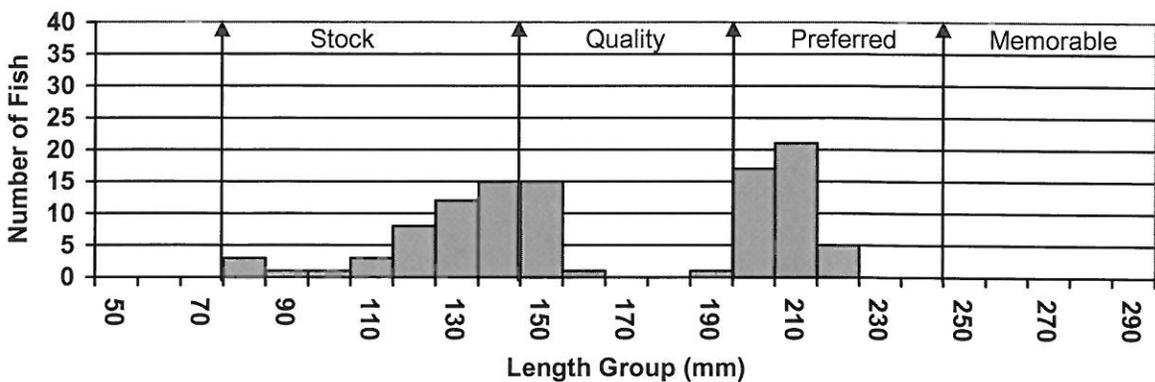
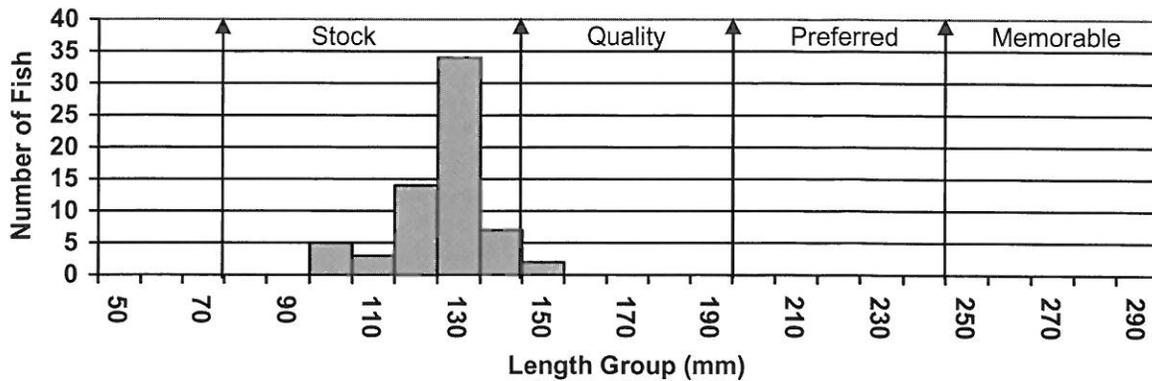


Figure 3. Length frequency histogram for bluegill sampled from Eagle Butte Lake, Dewey County, 2009.



Yellow Perch

A yellow perch population continues to exist in Eagle Butte Lake, although the numbers have increased. The CPUE of 7.9 is above the 1.4 from the 2011 survey (Table 9) as well as the 1.3 eight year mean (Table 2). Growth is good with means at or slightly above statewide, regional and SLI means (Table 5). Condition is fine with a mean Wr of 87. Figures 4 through 6 illustrate the length frequency histograms for the last three surveys. It can be seen that the sizes are increasing, but the biggest concern is the lack of young fish recruiting to the population. Not sure if this is due to the gear not sampling the smaller fish or truly a lack of recruitment. Monitoring over the next couple surveys will tell the tale.

Table 5. Average back-calculated lengths (mm) for each age class of yellow perch sampled from Eagle Butte Lake, Dewey County, 2014.

Year Class	Age	N	Back-calculated Age					
			1	2	3	4	5	6
2011	3	10	82	153	186			
2010	4	63	108	179	224	243		
2009	5	4	105	187	231	257	281	
2008	6	2	80	152	213	254	276	288
All Classes		79	94	167	213	252	279	288
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 4. Length frequency histogram for yellow perch sampled from Eagle Butte Lake, Dewey County, 2014.

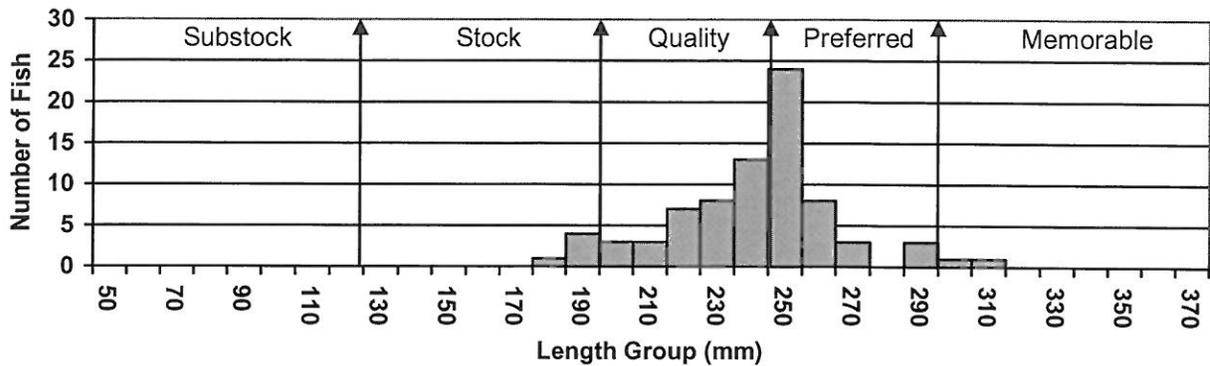


Figure 5. Length frequency histogram for yellow perch sampled from Eagle Butte Lake, Dewey County, 2011.

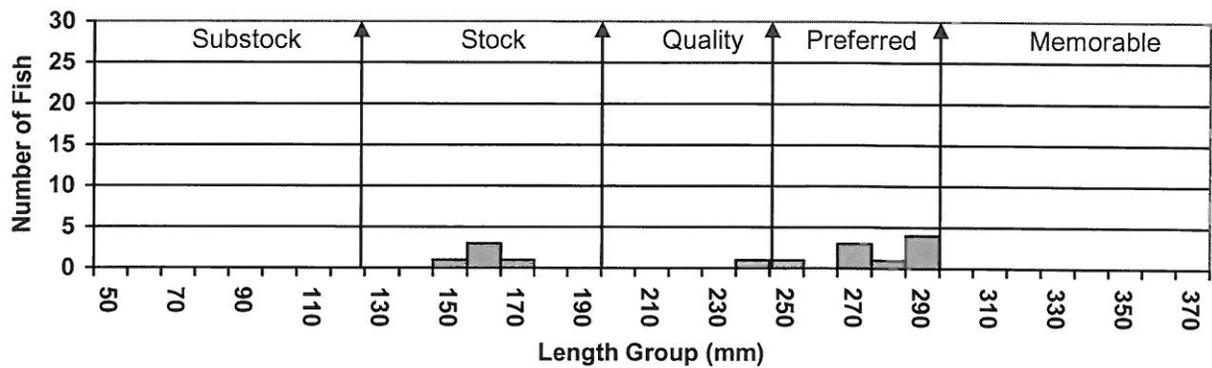
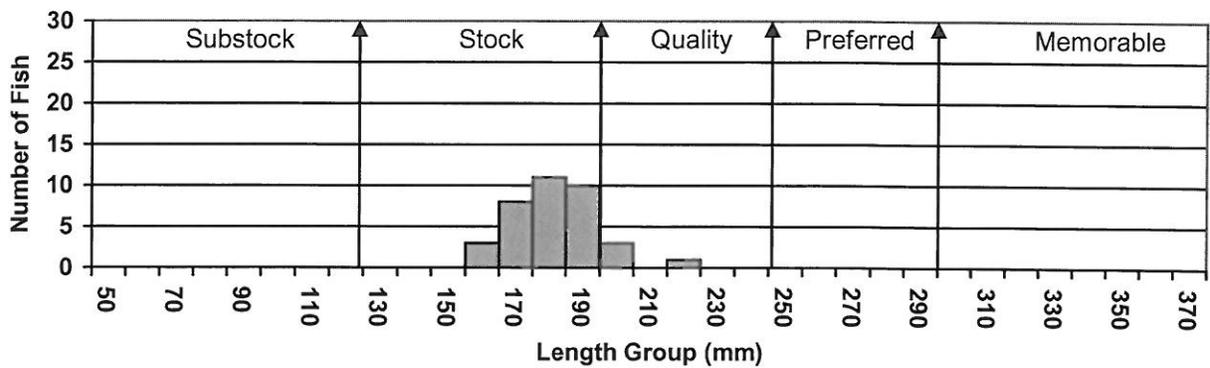


Figure 6. Length frequency histogram for yellow perch sampled from Eagle Butte Lake, Dewey County, 2009.



Largemouth Bass

Largemouth bass continue to be the only predator species present in Eagle Butte Lake. The electrofishing CPUE of 70.0 fish per hour is well above the two year mean of 19.0 (Table 3). It is hard to make many comparisons as only two other times has the lake been electrofished to sample the bass population and those were several years ago. Figures 7 through 9 illustrate the length frequency histograms for the last three surveys. These are somewhat misleading as well as figures 8 and 9 are from the summer portion of the survey with nets as no electrofishing was done those years. This can paint a very different picture of the population. A quality population appears to be establishing that will help to control the other species present in the lake. Growth is good with means right around statewide, regional and SLI means (Table 6). Condition is also good with a mean Wr of 101.

Table 6. Average back-calculated lengths (mm) for each age class of largemouth bass sampled from Eagle Butte Lake, Dewey County, 2014.

Year Class	Age	N	Back-calculated Age							
			1	2	3	4	5	6	7	
2011	3	57	101	172	230					
2010	4	4	77	184	310	367				
2009	5	2	83	197	304	362	384			
2008	6	3	74	179	283	366	406	425		
2007	7	3	57	143	236	329	378	401	428	
All Classes		69	79	175	273	356	389	413	428	
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 7. Length frequency histogram for largemouth bass sampled from Eagle Butte Lake, Dewey County, 2014.

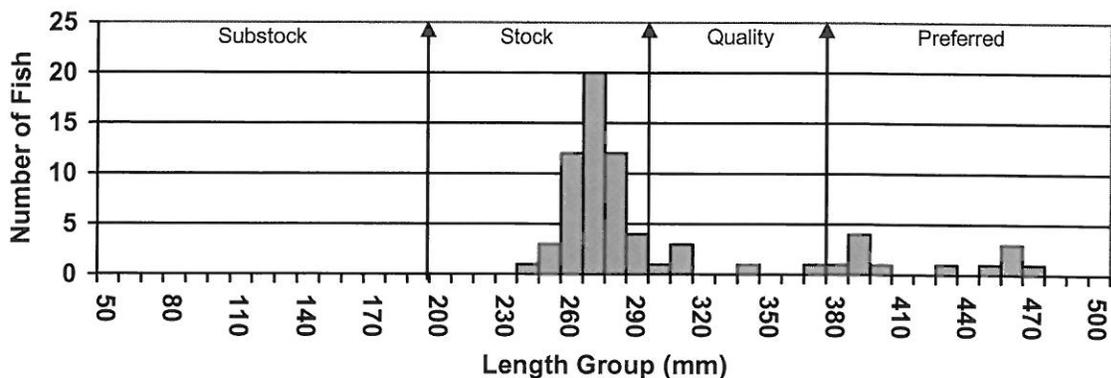


Figure 8. Length frequency histogram for largemouth bass sampled from Eagle Butte Lake, Dewey County, 2011.

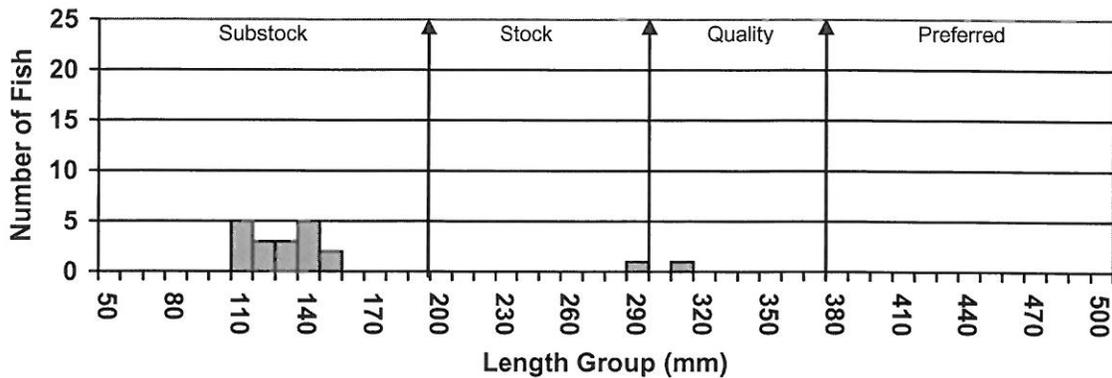
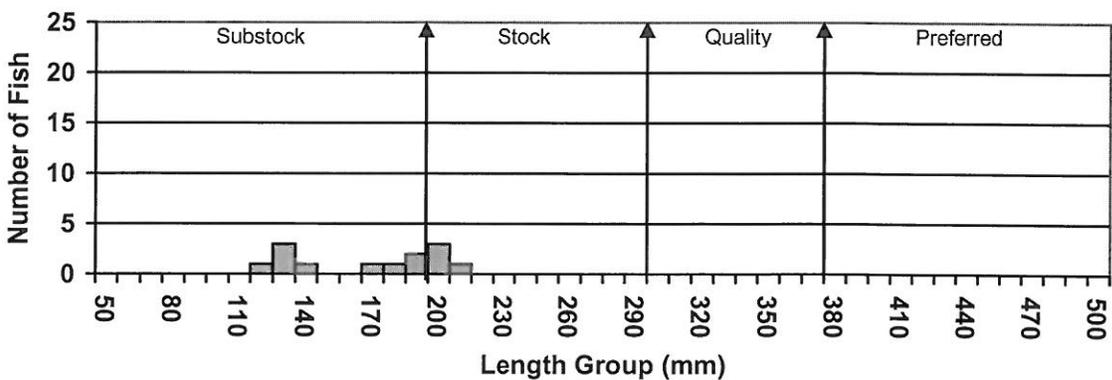


Figure 9. Length frequency histogram for largemouth bass sampled from Eagle Butte Lake, Dewey County, 2009.



Black Crappie

Black crappies have become the dominant panfish species sampled this survey. The CPUE of 41.9 is significantly above the 3.4 from the 2011 survey (Table 9) as well as the 3.0 eight year mean (Table 2). Growth continues to be on the slow side with means slightly below statewide, regional and SLI means (Table 7) for the second survey in a row. Condition is good though with a mean W_r of 105. Figures 10 and 11 illustrate the length frequency histograms for the last two surveys. Normally with a large jump in CPUE goes along with a large jump in young fish, but this is not the case. The fish are moving into the quality category and are becoming a desirable size for anglers to not only catch but to keep as well.

Table 7. Average back-calculated lengths (mm) for each age class of black crappie sampled from Eagle Butte Lake, Dewey County, 2014.

Year Class	Age	N	Back-calculated Age				
			1	2	3	4	5
2010	4	91	79	138	179	196	
2009	5	9	80	133	174	189	196
All Classes		100	79	135	176	193	196
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 10. Length frequency histogram for black crappie sampled from Eagle Butte Lake, Dewey County, 2014.

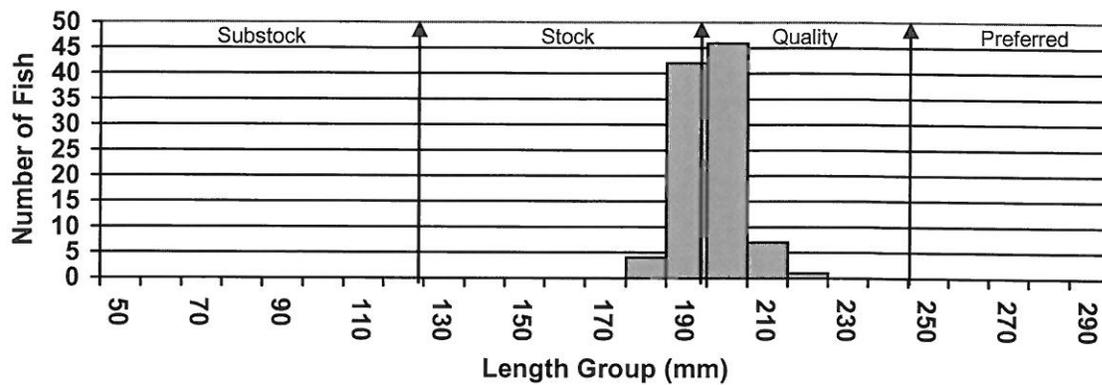
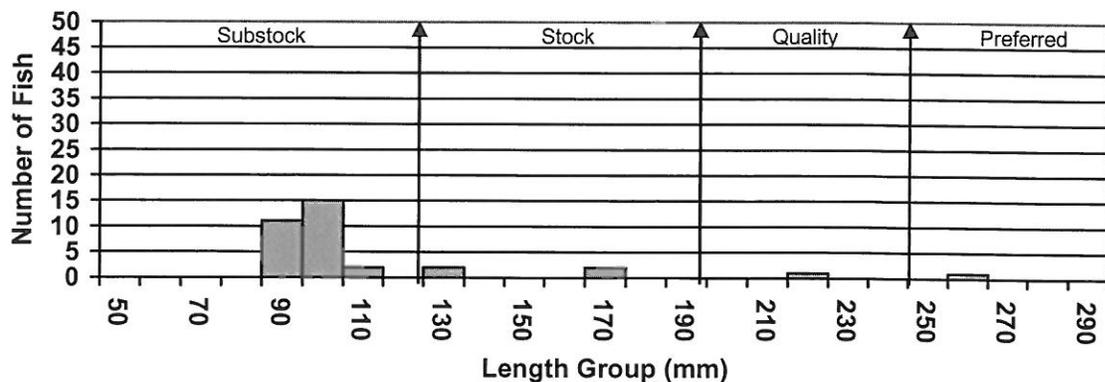


Figure 11. Length frequency histogram for black crappie sampled from Eagle Butte Lake, Dewey County, 2011.



Other Species

Black bullheads were the only other species sampled this survey. The CPUE of 12.0 is well above the 1.2 from the 2011 survey (Table 9) but well below the 163.6 eight year mean (Table 2). Figure 12 illustrates the length frequency histogram for the fish sampled this survey. The population is dominated by a good quality sided fish that would be desirable to anglers. Condition is good with a mean Wr of 101.

Northern pike, channel catfish, walleye, smallmouth bass, and green sunfish were the species not sampled this survey that had been in surveys past (Table 9).

Figure 12. Length frequency histogram for black bullhead sampled from Eagle Butte Lake, Dewey County, 2014.

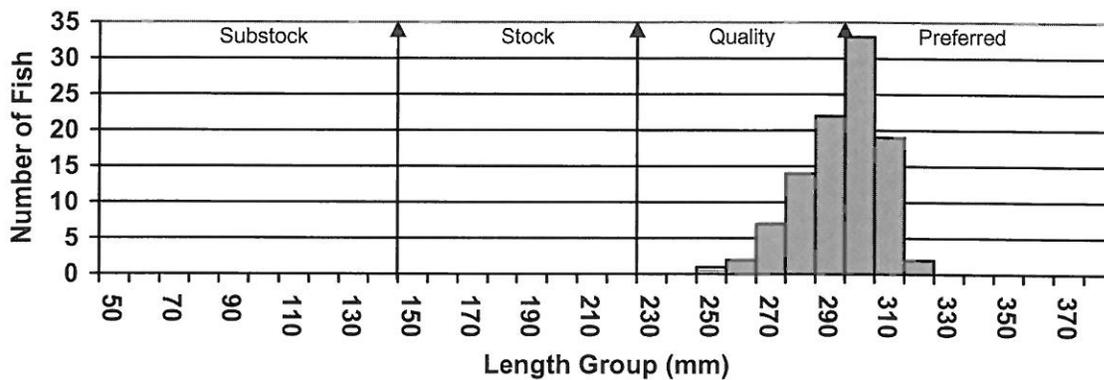


Table 8. Stocking records from the possible winterkill in 1992/93 to present for Eagle Butte Lake, Dewey County.

Year	Number	Species	Size
1997	8,500	Largemouth Bass	Fingerling
1997	1,672	Walleye	Fingerling
1998	200	Black Crappie	Adult
2001	2,315	Walleye	Fingerling
2008	8,640	Largemouth Bass	Fingerling

A few other stockings were made in 2008 after Eagle Butte refilled by the Cheyenne River Sioux Tribe Game and Fish Department to help get the fish populations in Eagle Butte going again.

RECOMMENDATIONS

1. Stock adult black crappies to supplement the population that is starting to take off.
2. Stock walleye fingerlings to build up the predator population to control the black bullhead population.
3. Stock prespawn adult largemouth bass to build up the predator population to control the black bullhead population.
4. Resurvey in 2017 to monitor the fish populations.

Table 9. Trap net (TN) and electrofishing (EF) CPUE for all fish species sampled in Eagle Butte Lake since survey records started.

Species	1978	1988	1992	1996	1999	2002	2006	2009	2011	2014
BLB (TN)	--	225.3	512.5	101.0	300.3	168.3	--	0.2	1.2	12.0
BLC (TN)	6.8	3.5	4.3	--	0.6	5.3	--	0.2	3.4	41.9
YEP (TN)	3.6	2.3	--	--	--	--	--	3.6	1.4	7.9
LMB (EF)	--	0.0	--	--	37.9	--	--	--	--	70.0
LMB (TN)	--	--	--	--	1.4	--	--	1.3	2.0	0.3
NOP (TN)	0.5	0.8	0.8	--	--	0.3	--	--	--	--
CCF (TN)	--	--	--	--	--	--	--	0.1	--	--
WAE (EF)	--	--	0.8	--	33.7	--	--	--	--	--
WAE (TN)	--	0.1	--	--	3.6	3.1	--	--	--	--
BLG (TN)	--	2.0	--	--	--	--	--	6.5	15.4	27.8
SMB (TN)	--	--	--	--	--	--	--	--	0.3	--
GSF (TN)	--	--	--	--	--	0.1	--	--	--	--

BLB – Black bullhead, BLC – Black crappie, YEP – Yellow perch, LMB – Largemouth bass, NOP – Northern pike, WAE – Walleye, BLG – Bluegill, CCF – Channel Catfish, GSF – Green sunfish, SMB – Smallmouth Bass