

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

2102-F-21-R-46

Name: Dante Lake **County(ies):** Charles Mix
Legal Description: T95N-R62W-Sec. 4 & 9 **GPS:** 43°04'00.35"N 98°10'35.36"W
Location from nearest town: 2 miles north and ½ mile east of Dante

Date of present survey: June 3-5, 2013 (netting); October 7, 2013 (electrofishing)
Date of last survey: June 28-30, 2010 (netting); October 14, 2010 (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
Bluegill	Black Bullhead
Largemouth Bass	

PHYSICAL DATA

Surface Area: 18 acres **Watershed:** 1,900 acres
Maximum Depth: 23 feet **Mean Depth:** 11 feet
Lake elevation at time of survey (field observations): 6-7 feet low
Contour map: Yes **Date:** 1973

Ownership of lake and adjacent lakeshore properties:

Dante Lake is an 18-acre impoundment south east of the city of Dante in eastern Charles Mix County. The lake was created in 1937 when the Works Progress Administration (WPA) constructed an earthen dam on an unnamed tributary of Chateau Creek. To allow for the construction of the dam and creation of the lake, four easement contracts to the State of South Dakota were signed and recorded. The easements allow for public use of the dam grade, lake and a strip of land to a point 12 feet above the high water contour.

Watershed condition with percentages of land use types:

The watershed of Dante Lake is approximately 1,900 acres or three square miles that is almost entirely privately owned agricultural and grassland. Land use in the watershed is 78% pasture and hay land composed of mostly native grasses, 20% cultivated cropland, and 2% roads, residences and trees.

Fishing access:

There is a good gravel access trail to a boat ramp on the northwest side of the lake for boat access. There is also access around the shoreline through easements for shore fishing opportunities. Shore fishing is limited by the amount of aquatic vegetation present during open water periods.

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

The dam grade is in good condition as well as the access road. There is a good boat ramp with a hard bottom past the last plank for access even during low water periods. No other structures are present.

Field observations of aquatic vegetation condition:

The submergent vegetation consisted of a few beds of sago pondweed and coontail in spots around the lake to depths of around 3 feet. Emergent vegetation consisted of thick cattails and rushes around the entire shoreline except on the dam grade, which is comprised of rocks.

CHEMICAL DATA

Field observations of water quality and pollution problems:

No obvious pollution problems were evident at the time of the survey. Water clarity was fine with a secchi disc reading of 1.5 feet. Other water quality characteristics were measured in the field on June 5, 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: Yes, depth unknown

Station for water chemistry located on attached map: Yes

Table 1. Water chemistry results from Dante Lake, Charles Mix County, June 5, 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	66.2	5.18	83.8	151	2035	8.37	3399	1696	1.79	134.7	1.5
A	16	58.4	0.67	167.4	294	2121	7.51	3737	1873	2.00	-303.4	

BIOLOGICAL DATA

Methods:

Dante Lake was sampled on June 3-5, 2013, with ten overnight trap net sets. The trap nets have 3ft x 5ft frames, 60ft leads, and ¾ inch knotted mesh. No experimental gill nets were set during this sampling period. On the evening of October 7, 2013, Dante Lake was electrofished for 30 minutes (3-ten minute transects) to sample the largemouth bass population. The boat was set up with 120 pulses per second of DC current at 170 volts and around 22-23 amps to electrofish the lake that had a conductivity of 3967 µS/cm with a water temperature of 59.8°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 Dante Lake, Charles Mix County, June 3-5, 2013.

Species	#	%	CPUE	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Bluegill	92	95.9	9.2	± 3.0	72.4	94	0	119
Black Bullhead	2	2.1	0.2	± 0.2	1.1	--	--	103
Yellow Perch	1	1.0	0.1	± 0.1	1.3	--	--	105
Fathead Minnow	1	1.0	0.1	± 0.1	0.0**	--	--	--

* Nine year mean (1981, 1983, 1987, 1992, 1995, 2000, 2006, 2009, 2010)

** First occurrence

Electrofishing Catch:

Table 3. Total catch from three, ten-minute runs of fall nighttime electrofishing on Dante Lake, Charles Mix County, October 7, 2013.

Species	#	%	CPUE	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Largemouth Bass	1	100	2.0	± 3.8	13.0	--	--	130

* Three year mean (2003, 2006, 2010)

Bluegill

Bluegills were the dominant fish species present in Dante Lake this survey. The CPUE of 9.2 fish is well below the 128.3 from the 2010 survey (Table 6) as well as the 72.4 nine year mean (Table 2). Figures 1 through 5 illustrate the length frequency histograms for the past five surveys. They show how the size structure moves up and down over time. Big fish are present for a couple years and then are gone. It then takes a couple more years for young fish to recruit and move up in size. The one alarming aspect of this population is the very slow growth rates. Growth means are below statewide, regional and SLI means (Table 4). This has been the norm for the last couple surveys. The addition of a predator population would help this problem out by keeping the numbers thinned down to allow for better growth rates. The Game and Fish Department uses this population as a source to stock other waters as well as to try and keep the numbers at a more manageable level. The interesting thing is that condition is good with a mean Wr of 119.

Table 4. Average back-calculated lengths (mm) for each age class of bluegill sampled from Dante Lake, Charles Mix County, 2013.

Year Class	Age	N	Back-calculated Age														
			1	2	3	4	5	6	7	8	9	10	11				
2012	1	25	56														
2006	7	3	37	57	83	108	125	149	157								
2005	8	22	42	61	78	101	111	123	146	158							
2004	9	31	42	62	80	95	107	119	131	155	166						
2003	10	2	36	58	85	97	119	124	132	166	174	182					
2002	11	7	43	55	68	80	101	112	123	147	151	162	168				
All Classes		90	43	59	79	96	113	125	138	157	164	172	168				
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 Dante Lake, Charles Mix County, 2013.

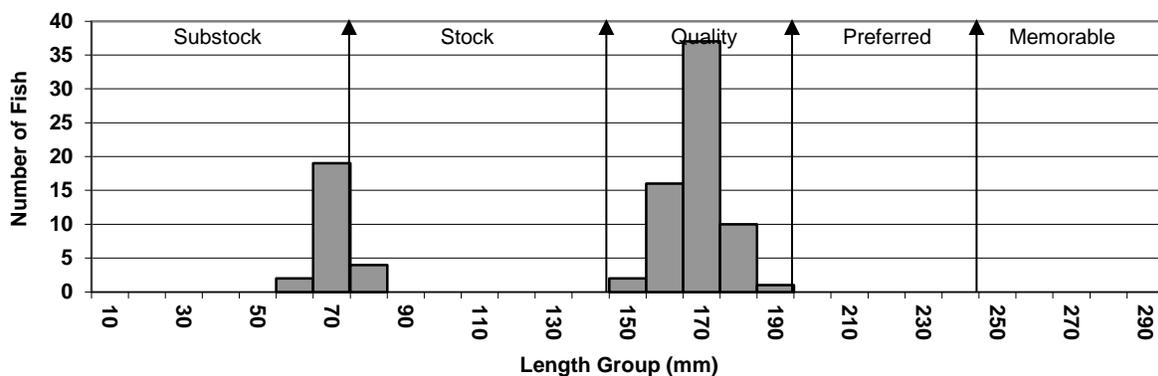


Figure 2. Length frequency histogram for bluegill sampled from Dante Lake, Charles Mix County, 2010.

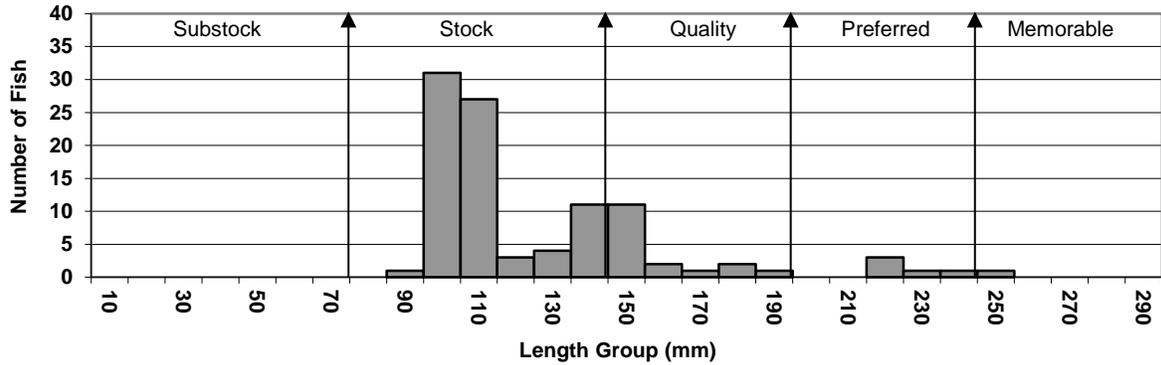


Figure 3. Length frequency histogram for bluegill sampled from Dante Lake, Charles Mix County, 2009.

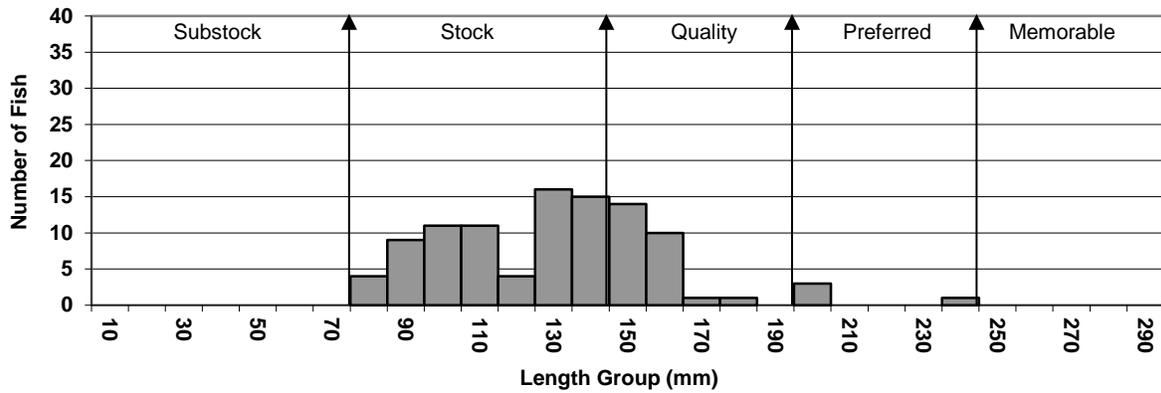


Figure 4. Length frequency histogram for bluegill sampled from Dante Lake, Charles Mix County, 2006.

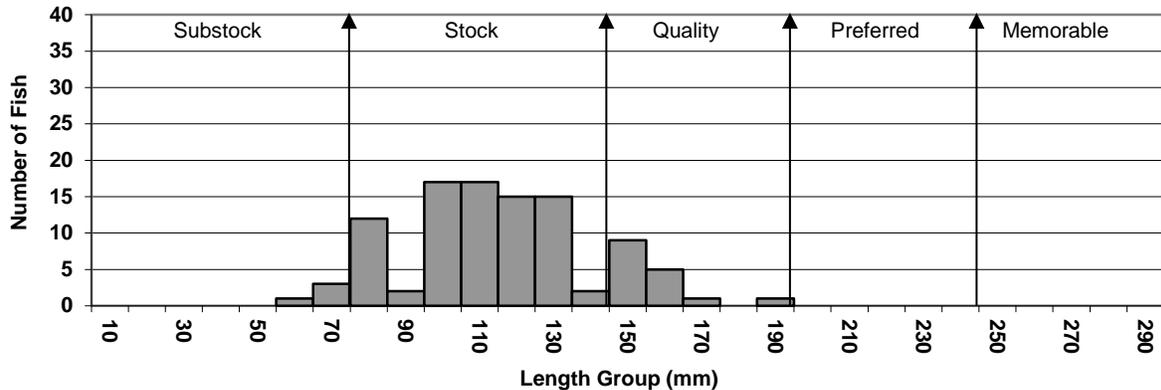
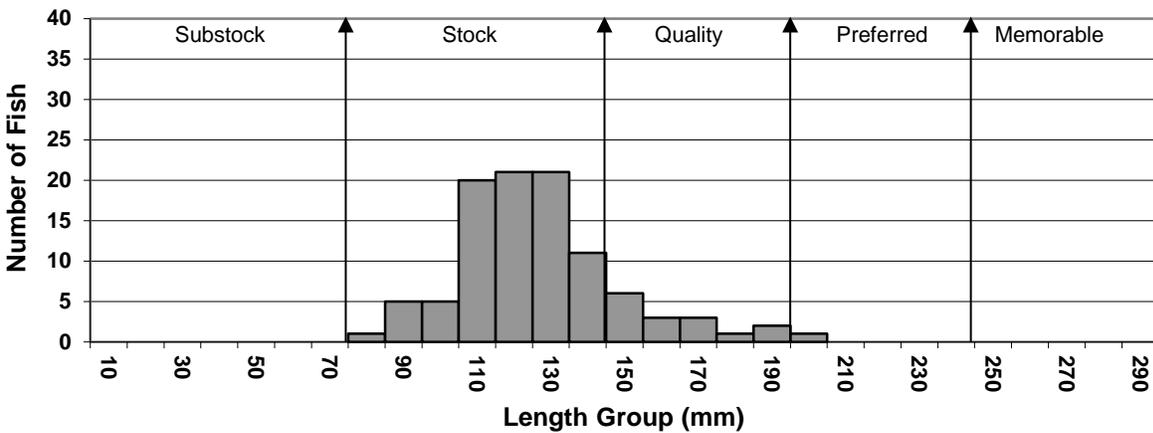


Figure 5. Length frequency histogram for bluegill sampled from Dante Lake, Charles Mix County, 2003.



Other species

Black bullhead, yellow perch, fathead minnow, and largemouth bass were the only other species sampled this survey. Each only had either one or two fish sampled and this is not enough to make any inferences about their populations. The biggest surprise was the lack of any largemouth bass. A stocking of overwintered fish from the hatchery was made early this spring (Table 5) and only one was seen this fall. The fall electrofishing sample may not have been effective due to the extremely high conductivity levels.

Black crappie, northern pike, channel catfish, walleye, pumpkinseed sunfish, and shortnose gar are the species not sampled that had been in surveys past (Table 6).

Table 5. Stocking records from the last ten years for Dante Lake, Charles Mix County.

Year	Number	Species	Size
2004	100	Largemouth Bass	Juvenile
2006	2,580	Largemouth Bass	Fingerling
2012	102	Largemouth Bass	Juvenile
2013	624	Largemouth Bass	Large Fingerling

RECOMMENDATIONS

1. Resurvey with trap nets and electrofishing in 2016.
2. Trap and transfer bluegill from Dante to use in other State waters where needed.
3. Stock largemouth bass adults, juveniles, and fingerlings to help reduce and manage the bluegill population.

Table 6. Trap net (TN) and electrofishing (EF) CPUE for all fish species sampled in Dante Lake, Charles Mix County since surveys of record in 1981.

Species	1981	1983	1987	1992	1995	2000	2003	2006	2009	2010	2013
BLB (EF)	--	--	--	--	--	--	--	--	--	--	--
BLB (TN)	--	1.6	1.3	0.3	4.1	2.3	--	0.1	0.2	0.1	0.2
BLC (EF)	--	--	--	--	--	--	--	--	--	--	--
BLC (TN)	--	--	1.4	--	0.1	--	--	--	--	--	--
YEP (EF)	--	--	--	--	--	--	--	--	--	--	--
YEP (TN)	6.25	5.3	--	--	--	--	--	--	0.4	--	0.1
LMB (EF)	--	--	--	--	--	--	0	39.0	--	0.0	2.0
LMB (TN)	0.4	1.6	--	--	--	--	--	--	--	--	--
NOP (EF)	--	--	--	--	--	--	--	--	--	--	--
NOP (TN)	0.3	--	--	0.4	0.3	--	--	--	--	--	--
CCF (EF)	--	--	--	--	--	--	--	--	--	--	--
CCF (TN)	--	0.1	0.1	--	1.3	--	--	--	--	--	--
WAE (EF)	--	--	--	--	--	--	--	--	--	--	--
WAE (TN)	--	1.0	--	--	--	--	--	--	--	--	--
BLG (EF)	--	--	--	--	--	--	2127	--	--	--	--
BLG (TN)	13.1	26.8	28.6	24.8	89.8	182.3	--	64.1	93.7	128.3	9.2
PUS (EF)	--	--	--	--	--	--	--	--	--	--	--
PUS (TN)	--	--	--	--	0.1	--	--	--	--	--	--
SHG (EF)	--	--	--	--	--	--	--	--	--	--	--
SHG (TN)	--	0.1	--	--	--	--	--	--	--	--	--
FHM (EF)	--	--	--	--	--	--	--	--	--	--	--
FHM (TN)	--	--	--	--	--	--	--	--	--	--	0.1

BLB – Black bullhead; BLC – Black crappie; YEP – Yellow perch; LMB – Largemouth bass; NOP – Northern pike; CCF – Channel catfish; WAE – Walleye; BLG – Bluegill; PUS – Pumpkinseed sunfish; SHG – Shortnose gar; FHM – Fathead minnow