

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

2102-F21-R-46

Name: Flat Creek Lake

County: Perkins

Legal description: Sec 20 & 21, T 21N, R 16E

Location from nearest town: 0.5 mi. west, 10 mi. south of Lemmon, SD

Dates of present survey: June 5-6, 2013

Date last surveyed: June 19-21, 2012

Management classification: Warmwater semi-permanent

Primary Species: (game and forage)

1. Black Bullhead
2. Black Crappie
3. Bluegill
4. Northern Pike
5. Yellow Perch

Secondary and other species:

1. Channel Catfish
2. Common Carp
3. Golden Shiner
4. _____
5. _____

PHYSICAL CHARACTERISTICS

Surface Area: 203.4 acres;

Watershed: 102,400 acres

Maximum depth: 24 feet;

Mean depth: 7.9 feet

Lake elevation at survey (from known benchmark): -1 foot

Ownership of lake and adjacent lakeshore property:

Flat Creek Lake is divided by Highway 73. Approximately 50% of the shoreline is public and the rest is in private ownership. The south west side is owned by the South Dakota Game Fish and Parks (SD GFP) and lies within the Llewellyn Johns Recreation Area. The SD GFP obtained easements in 1934 that grants public access around the shoreline up to 12 feet above the high water mark.

Fishing Access:

Flat Creek Lake has poor access except along Highway 73 which bisects the lake. Other shoreline areas are overgrown with thick vegetation including large areas of poison ivy. Boat access is also poor with no useable boat ramp. Some small boats can be launched off the shore on the southwest corner of the east half of the lake at a break in the shoreline vegetation.

Observations of Water Quality and Aquatic Vegetation:

Cattails and bullrush surround most of the shoreline areas on both sides of the highway. Department personnel identified no pollution problems during the 2013 survey.

Observations on conditions of structures (i.e. spillway, boat ramps and docks, roads etc)

All structures appeared to be in good condition during the 2013 lake survey.

MANAGEMENT OBJECTIVES

- Objective 1.** Increase Walleye density to produce and maintain a gill-net CPUE for stock-length Walleye ≥ 10 , and a PSD range of 30-60.
- Objective 2.** Increase and maintain a moderate to high density of Largemouth Bass with PSD range between 20 and 40.
- Objective 3.** Maintain a mean trap net CPUE of stock-length Black Bullhead ≤ 100 and PSD between 30 and 60.

BIOLOGICAL DATA

Sampling Effort and Catch

Trap and gill nets were used on June 5-6, 2013 to sample adult fish populations in the lake. Trap nets were modified fyke nets consisting of a 1.3 X 1.5 m frame, 19.1 mm (0.75 in) mesh and a 1.2 X 23 m (3.9 X 75.5 ft) lead. The gill net was an experimental-type measuring 45.7 m (150 ft) long and 1.8 m (6 ft) deep with six 7.6 m (25 ft) panels with bar mesh sizes: 12.7 mm (0.5 in), 19.1 mm (0.75 in), mm (1.25 in), 38.1 mm (1.5 in), and 50.8 mm (2.0 in). The net sampling consisted of four trap net nights and one gill net night (Figure 1). Catch data is displayed in Tables 1 and 2. Discussion on selected fish species follows and completes this report

Table 1. Catch data from all fish species collected in four trap nets in Flat Creek Lake, Perkins County, June 5-6, 2013. CPUE with 80% confidence intervals in parentheses. PSD, PSD-P and *Wr* with 90% confidence intervals in parentheses.

Species	N	CPUE	CPUE-S	PSD	PSD-P	<i>Wr</i> \geq S
Black Bullhead	414	103.5 (51.2)	99.0 (48.8)	5 (2)	0	87.1 (1.3)
Common Carp	76	19.0 (15.4)	6.5 (7.6)	15 (13)	0	79.6 (1.1)
Northern Pike	3	0.8 (0.8)	0.8 (0.8)	--	--	97.2 (7.1)
Walleye	4	1.0 (1.2)	1.0 (1.2)	--	--	90.5 (4.1)
White Sucker	1	0.3 (0.4)	0.2 (0.4)	--	--	79.6
Yellow Perch	5	1.3 (1.2)	1.3 (1.2)	--	--	81.7 (6.1)

Table 2. Catch data from all fish species collected in one gill net in Flat Creek Lake, Perkins County, June 5-6, 2013. CPUE with 80% confidence intervals in parentheses. PSD, PSD-P and *Wr* with 90% confidence intervals in parentheses.

Species	N	CPUE	CPUE-S	PSD	PSD-P	<i>Wr</i> \geq S
Black Bullhead	34	34.0	32.0	3 (5)	0	88.0 (2.2)
Common Carp	10	10.0	1.0	0	0	83.2
Northern Pike	2	2.0	2.0	--	--	95.0 (14.3)
Walleye	1	1.0	1.0	--	--	85.5

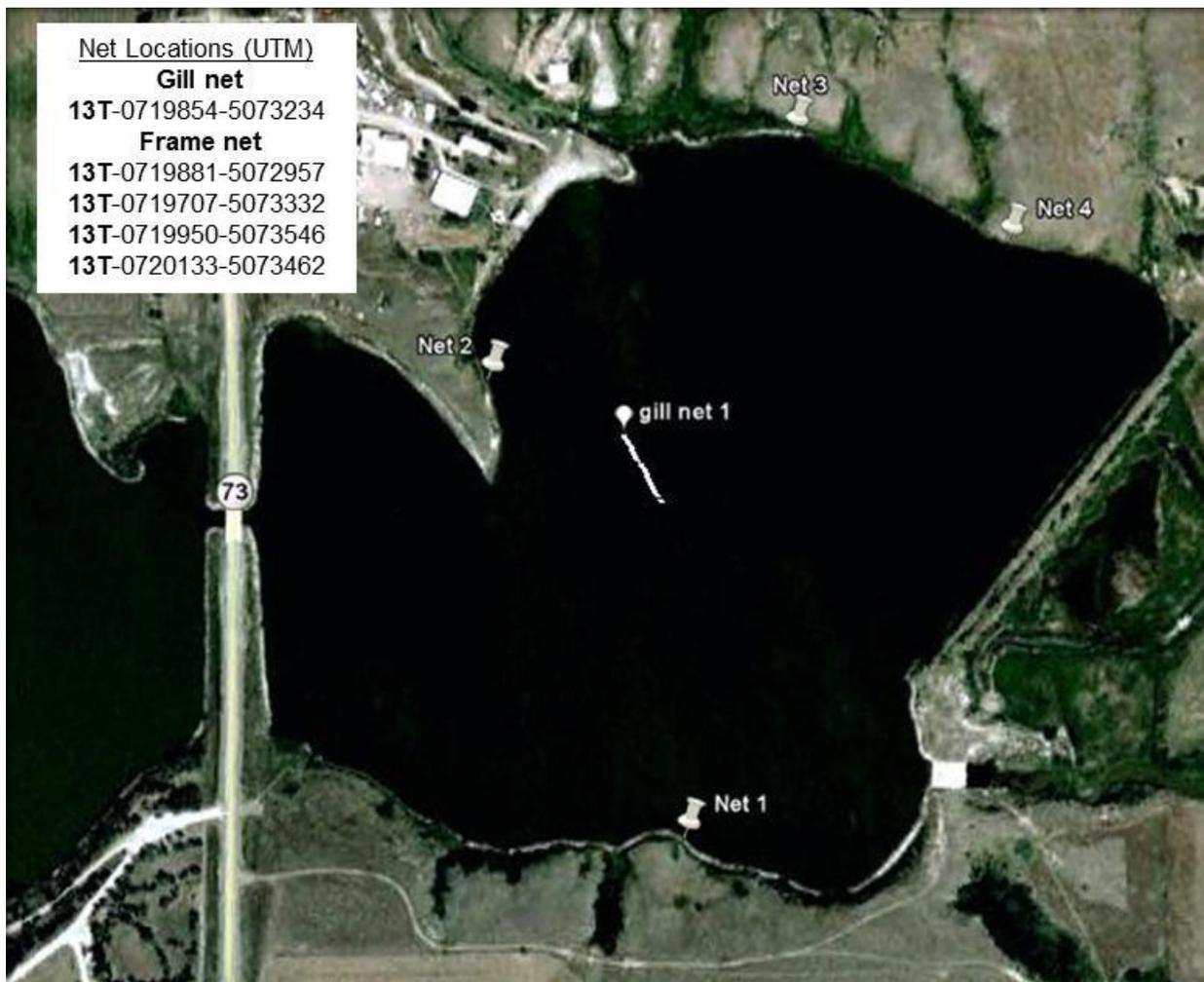


Figure 1. Locations, including GPS points, of experimental gill nets and trap nets (Frame net; Net 1, Net 2, Net 3, Net 4) during the annual fishery survey of Flat Creek Lake, Perkins County, South Dakota, 2013.

Black Bullheads

Black Bullhead density appears to have risen. CPUE from trap nets this survey was 103.5 with the single gill net catching 34 (Tables 1 and 2). In 2010, trap nets had a CPUE of 42.8 (Table 3). Size structure, however, remains well below objective ranges with a PSD of 5. Fish condition was better than last year with a *Wr* for stock length and larger fish of 87.1, compared to 79.7 in 2012. The length frequencies show these fish have grown very little since the survey in 2010 (Figure 2). To meet all management objectives, densities of large predatory fish probably need to increase to increase predation on the abundant Black Bullheads and, thereby, improve population size structure, fish condition and growth rates by reducing intraspecific competition.

Table 3. Composite listing of data for Black Bullhead collected by trap nets in Flat Creek Lake, 2010, 2012-2013. CPUE's with 80% confidence intervals in parentheses. PSD, PSD-P and $Wr \geq S$ with 90% confidence intervals in parentheses.

Year	CPUE	PSD	PSD-P	$Wr \geq S$
2010	64.8 (20.3)	0	0	--
2012	42.8 (46.9)	8 (5)	1 (2)	79.7 (1.1)
2013	103.5 (51.2)	5 (2)	0	87.1 (1.3)

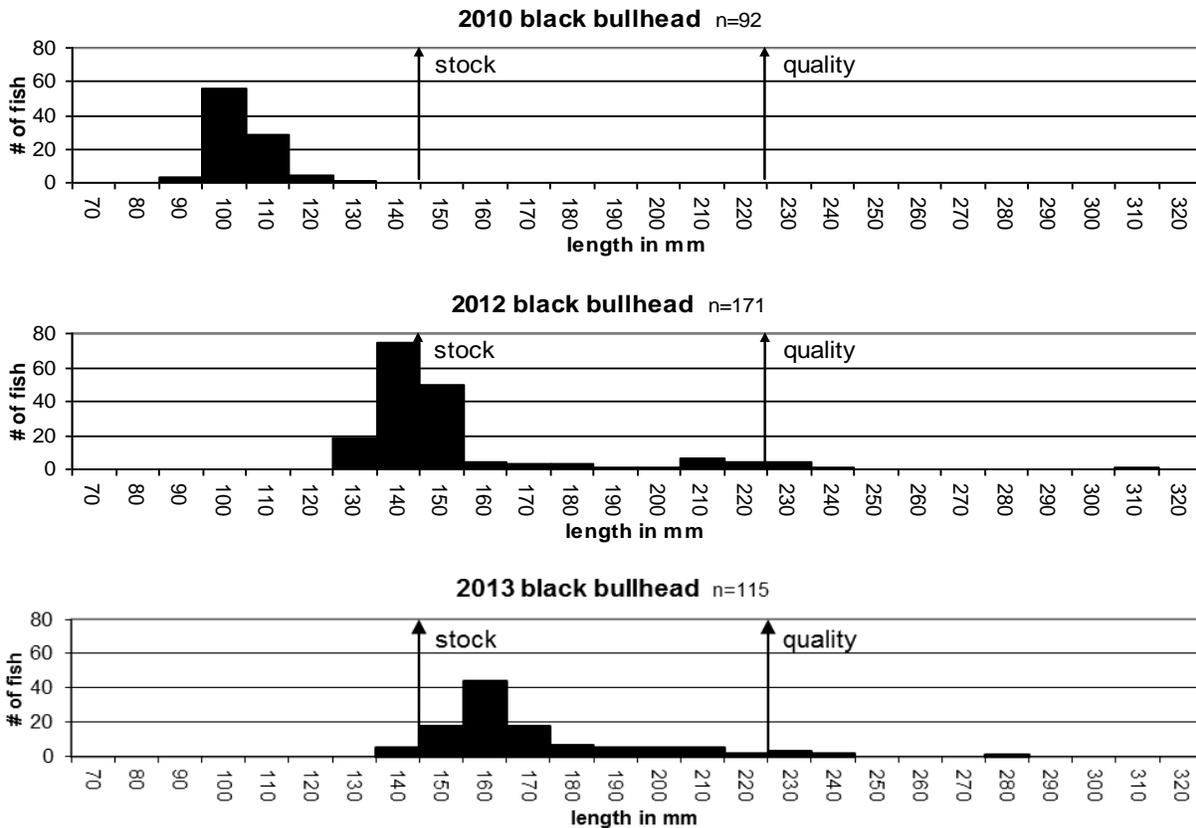


Figure 2. Length frequencies of Black Bullheads from trap nets in Flat Creek Lake 2010, 2012-2013.

Common Carp

The Common Carp population resembles the Black Bullhead population, i.e. a large year class of small fish. Gill net CPUE was 10 this year (Table 2), compared to 43 last year. Trap net CPUE was 19.0 (Table 1), compared to 5.5 last year. Length frequencies show the 2010 year class is now reaching the stock length of 280 mm (Figure 3).

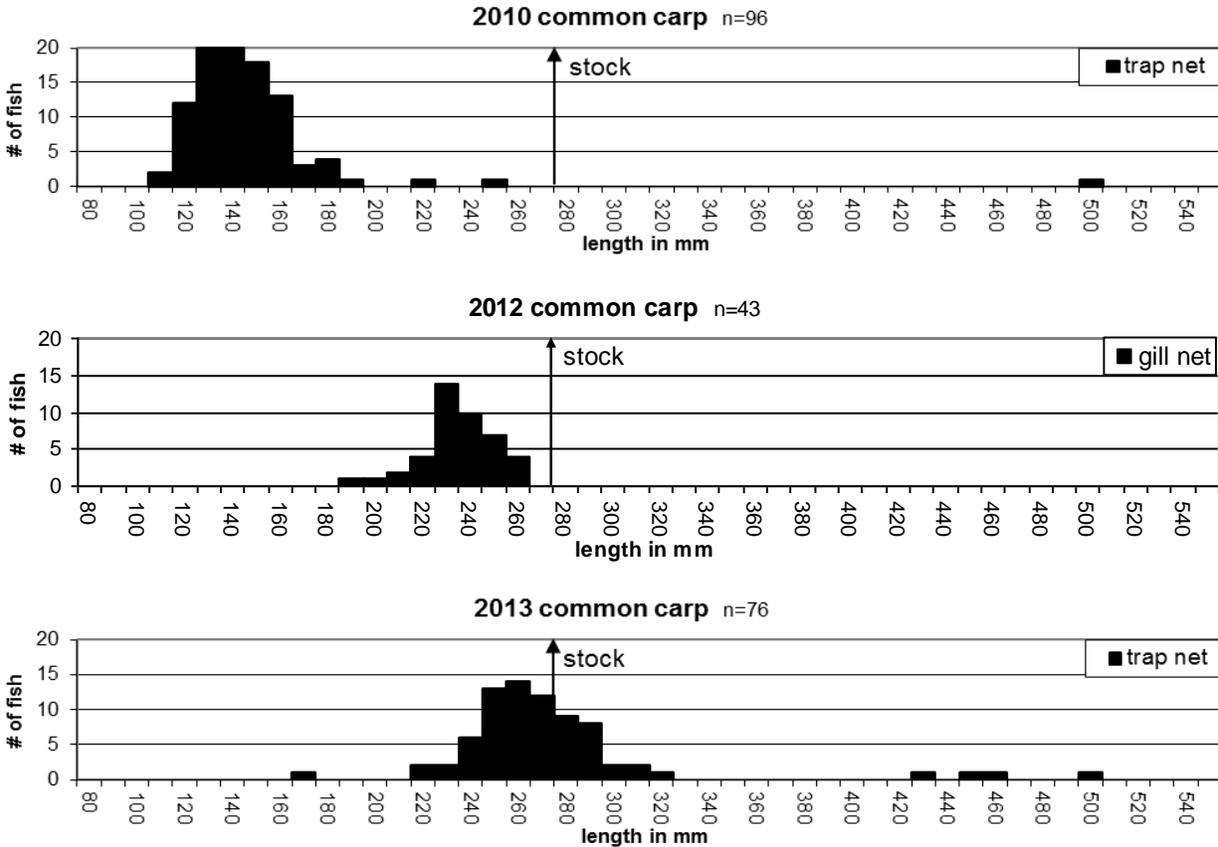


Figure 3. Length frequencies for Common Carp from Flat Creek Lake, Perkins County, 2010, 2012-2013.

Northern Pike

The Northern Pike population shows no evidence of recruitment in recent years with no fish sampled under 680 mm (Figure 4). Catch rates indicate a low-density population, with the single gill net catching three fish and the trap nets catching only two. Fish condition was good with *Wr* values in the mid 90's. With the abundant forage base of Common Carp and Black Bullhead, these fish should grow rapidly and probably provide some "big fish" opportunity to the Flat Creek Lake fishery.

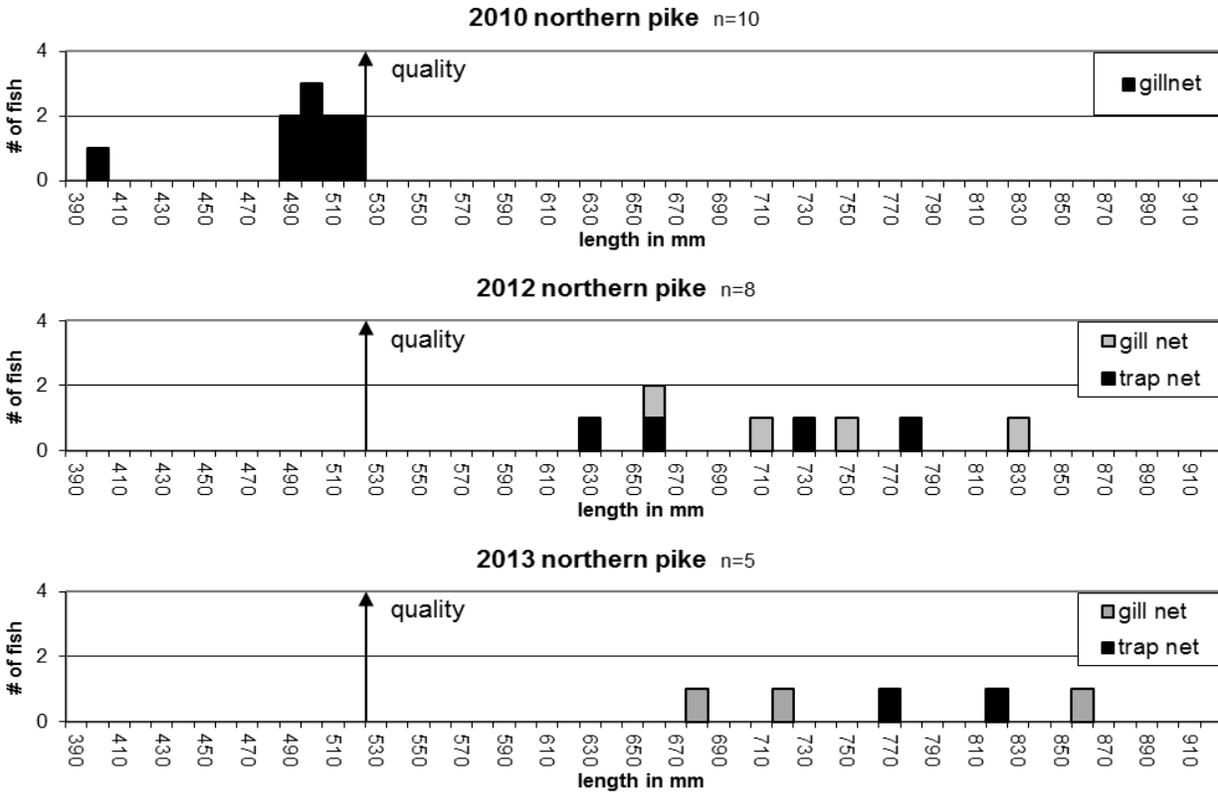


Figure 4. Length frequencies for Northern Pike from gill nets and trap nets in Flat Creek Lake, Perkins County, 2010, 2012-2013.

Walleye

Flat Creek Lake appears to have a low density Walleye population with the single gill net catching two, and the trap nets catching four (Tables 1 and 2). Last year, the gill net caught five and the trap nets another 14. These numbers are well below the management objectives for gill net catch rates. No fish were sampled under 460 mm indicating poor recruitment (Figure 5). Four thousand large fingerlings were stocked in October in attempts to increase Walleye density.

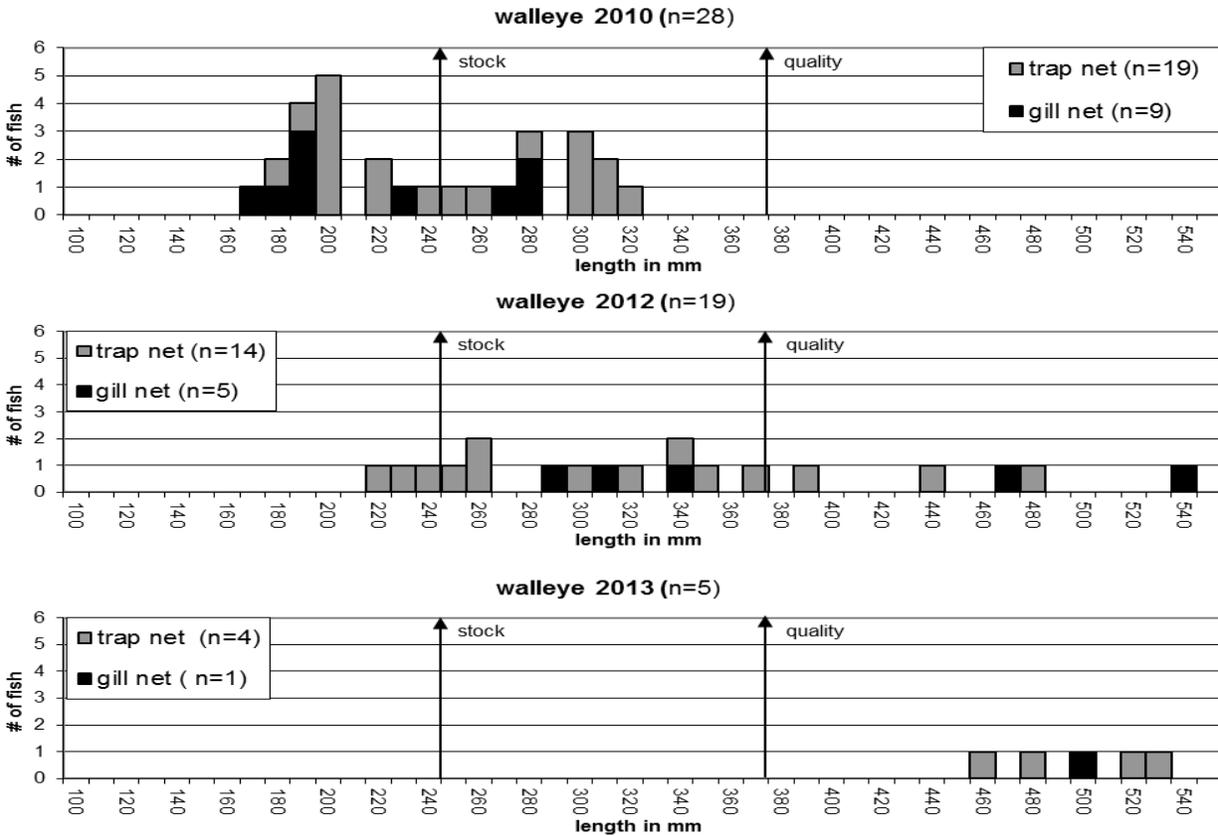


Figure 5. Length frequencies for walleye from trap nets and gill nets in Flat Creek Lake, Perkins County, 2010, 2012-2013.

RECOMMENDATIONS

1. If water levels are adequate in 2013, stock adult Largemouth Bass at a rate of 10 per acre to increase bass density and to help reduce Black Bullhead numbers and improve panfish quality.
2. Stock large, fall Walleye fingerlings at a rate of 10 per acre, at least every other year in order to reach management objectives and to help reduce Black Bullhead and Common Carp numbers.

APPENDIX

Appendix A. Stocking history, including year, number, species and size of fish for Flat Creek Lake, Perkins County, South Dakota, 2009-2013.

Year	Number	Species	Size
2009	46,625	Walleye	Fingerling
	1,000	Largemouth Bass	Fingerling
2010	680	Yellow Perch	Adult
	191,200	Northern Pike	Fry
	20,000	Walleye	Fingerling
	1,000	Largemouth Bass	Fingerling
2011	7,800	Largemouth Bass	Fingerling
	30,000	Northern Pike	Fry
	13,930	Walleye	Fingerling
2012	14,460	Largemouth Bass	Fingerling
2013	4,000	Walleye	Large Fingerling