

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

2102-F21-R-46

Name: Gardner Lake

County: Harding

Legal description: Sec 10,15,22, T 19N, R 4E

Location from nearest town: 3 miles west and 1 mile north of Buffalo, SD

Dates of present survey: July 17-19, 2013

Date last surveyed: July 11-13, September 22, 2011

Management classification: Warmwater permanent

Primary Species: (game and forage)

- 1. Walleye
- 2. Black Crappie
- 3. Yellow Perch
- 4. Channel Catfish
- 5. _____
- 6. _____
- 7. _____
- 8. _____

Secondary and other species:

- 1. Black Bullhead
- 2. Common Carp
- 3. White Sucker
- 4. River Carpsucker
- 5. Spottail Shiner
- 6. Fathead Minnow
- 7. Largemouth Bass
- 8. Northern Pike

PHYSICAL CHARACTERISTICS

Surface Area: 203 acres

Watershed: 13,340 acres

Maximum depth: 10 feet

Mean depth: 7 feet

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

Ownership of lake and adjacent lakeshore property:

South Dakota Department of Game, Fish and Parks owns most of the land adjacent to Gardner Lake; however, three small lakeside portions are privately owned. Game, Fish and Parks has easements, including public access, on this land.

Fishing Access

Access to Gardner Lake is by a 1½ mile gravel road running north from Highway 20. The gravel road splits and leads to a concrete plank boat ramp on the west side of the lake or runs along the east side of the lake and stops on the south side of the dam. Two track trails also provide limited vehicle access along each side of the lake. A new boat ramp was recently installed and boat docks furnished by local businesses are available for lake users when launching boats.

Observations of Water Quality and Aquatic Vegetation:

Due to extremely turbid water no vegetation was observed in Gardner during the 2013 survey. No pollution problems were identified by departmental personnel during the 2013 survey.

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

In 1987-1988 extensive reconstruction of the dam and spillway occurred. Since the rebuild, problems with the spillway have been identified and are currently under consideration for repair.

BIOLOGICAL DATA

Sampling Effort and Catch

Trap nets and gill nets were used on July 17-19, 2013 to sample adult fish populations in the lake (Figure 1). 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 nets were 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 six trap net nights and two gill net nights and 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 species collected in six trap nets in Gardner Lake, Harding County, July 17-19, 2013. CPUE's 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> ≥ S
Black Crappie	999	166.5 (24.1)	165.5 (24.1)	88 (2)	0	97.2 (1.1)
Northern Pike	4	0.7 (1.0)	0.7 (1.0)	--	--	86.0 (8.4)
Walleye	11	1.8 (1.1)	1.8 (1.1)	82 (22)	45 (29)	77.6 (4.2)

Table 2. Catch data from all species collected in two gill nets in Gardner Lake, Harding County, July 17-19, 2013. CPUE's 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> ≥ S
Black Crappie	7	3.5 (7.7)	3.0 (6.2)	--	--	106.8 (4.0)
Channel Catfish	3	1.5 (1.5)	1.5 (1.5)	--	--	--
Common Carp	20	10.0 (6.2)	10.0 (6.2)	80 (16)	0	86.4 (1.6)
Northern Pike	6	3.0 (0.0)	3.0 (0.0)	--	--	91.7 (3.8)
Spottail Shiner	8	4.0 (3.1)	--	--	--	--
Walleye	9	4.5 (1.5)	4.0 (0.0)	63 (35)	13 (23)	81.9 (3.1)

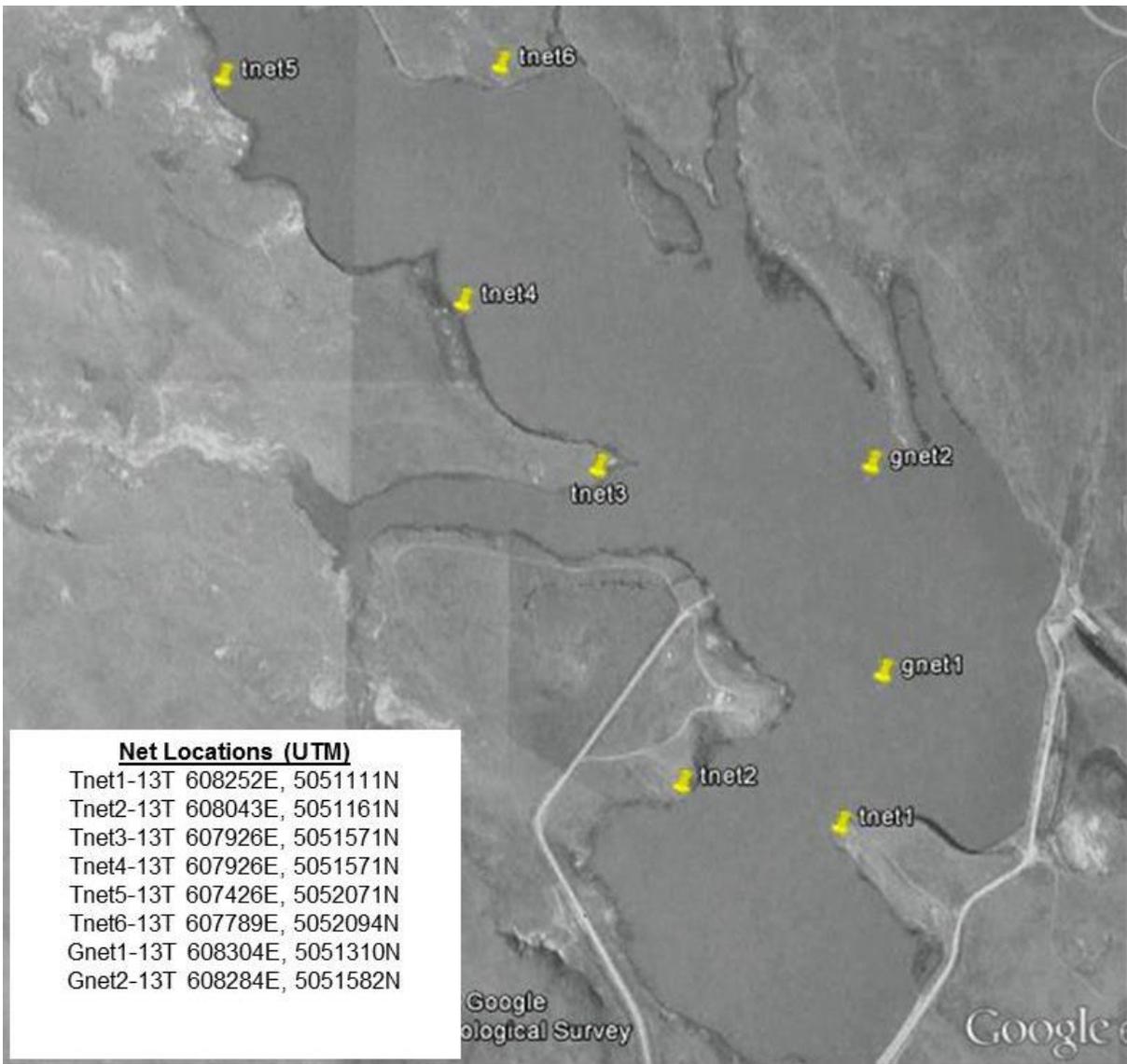


Figure 1. Locations, including GPS points, of experimental gill nets (gnets) and trap nets (tnets) during the annual fishery survey of Gardner Lake, Harding County, South Dakota, in 2013.

Black Crappie

Current Black Crappie management objectives are for trap net CPUE between 10 and 50, and maintain PSD between 50 and 80. Our density was above the objective with a CPUE of 166.5 (Tables 1 and 3). Size structure was also above the objective range with a PSD of 88. In 2011, CPUE was 86.8 with a PSD of zero. Length frequencies show a population dominated by a large year class of fish between 200-230 mm (Figure 2).

Table 3. Composite listing of data for Black Crappie collected by trap nets in Gardner Lake, 2003-2013. CPUE's with 80% confidence intervals in parentheses. PSD and PSD-P with 90% confidence intervals in parentheses.

Year	N	CPUE	PSD	PSD-P
2003	67	8.4 (1.6)	77 (10)	8 (6)
2004	50	6.3 (3.2)	88 (8)	28 (11)
2006	2	0.3 (0.3)	--	--
2007	0	0	--	--
2009	91	13.0 (7.6)	90 (9)	30 (14)
2011	527	86.8 (44.7)	0	0
2013	999	166.5 (24.1)	88 (2)	0

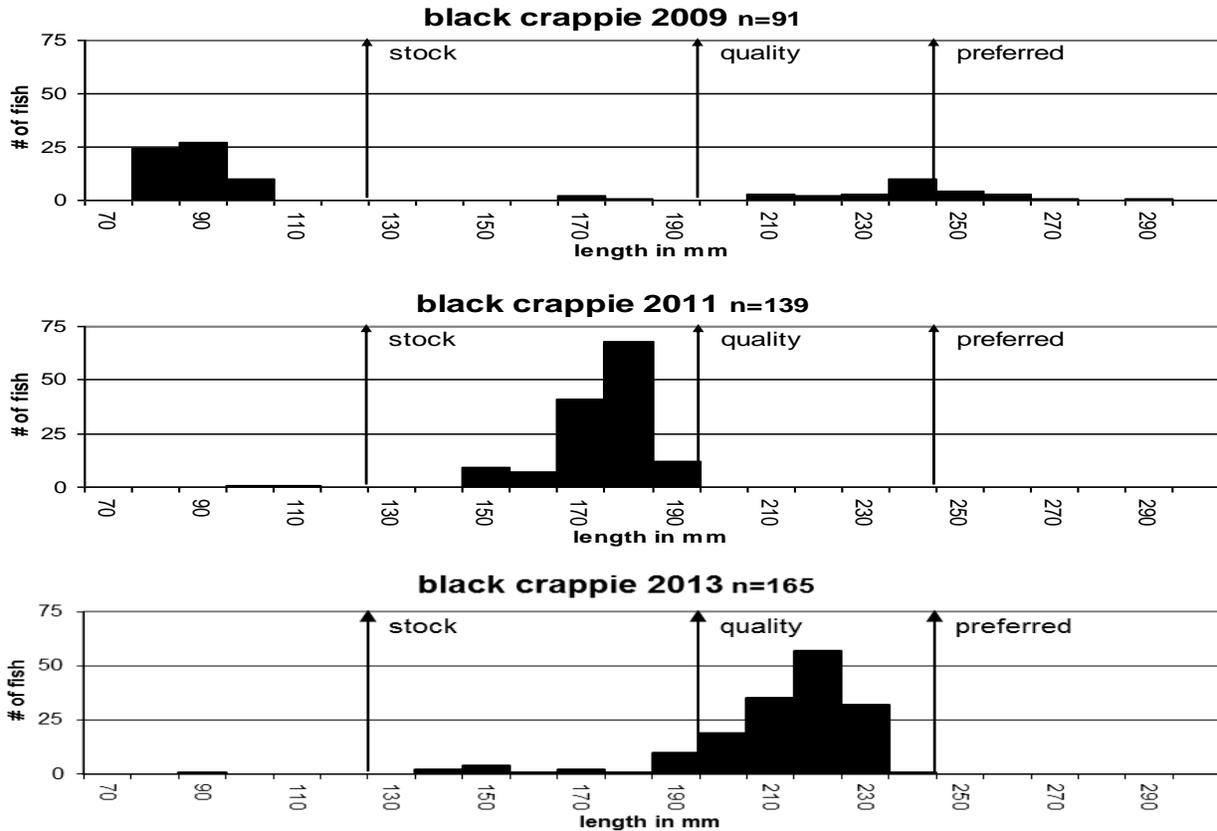


Figure 2. Length frequencies of Black Crappie from trap nets in Gardner Lake, 2009, 2011, 2013.

Walleye

The management objective for Walleye in Gardner Lake is to maintain a fishery with a minimum gill net CPUE for stock length Walleye of 10, a PSD range of 30-60, and PSD-P of 10 or greater. Walleye density remains lower than objective range with a gill net CPUE of 4.5 (Tables 2 and 4).

Fish condition was low with a *Wr* of 81.9. The length frequencies indicate a balanced size structure with fish of various sizes (Figure 3).

Table 4. Composite listing of data for Walleye collected in Gardner Lake, 2006-2013. CPUE's with 80% confidence intervals in parentheses and *Wr* with 90% confidence intervals.

Year	Total #	Gill net CPUE	Trap net CPUE	Gill net <i>Wr</i> >Stock Length
2006	17	0.5 (1.5)	2.7 (1.5)	--
2007	27	12.0 (9.2)	0.4 (0.4)	105.9 (1.8)
2009	31	8.0 (9.2)	2.1 (0.7)	84.9 (0.8)
2011	26	5.5 (4.6)	2.5 (3.1)	78.5 (1.9)
2013	20	4.5 (1.5)	1.8 (1.1)	81.9 (3.1)

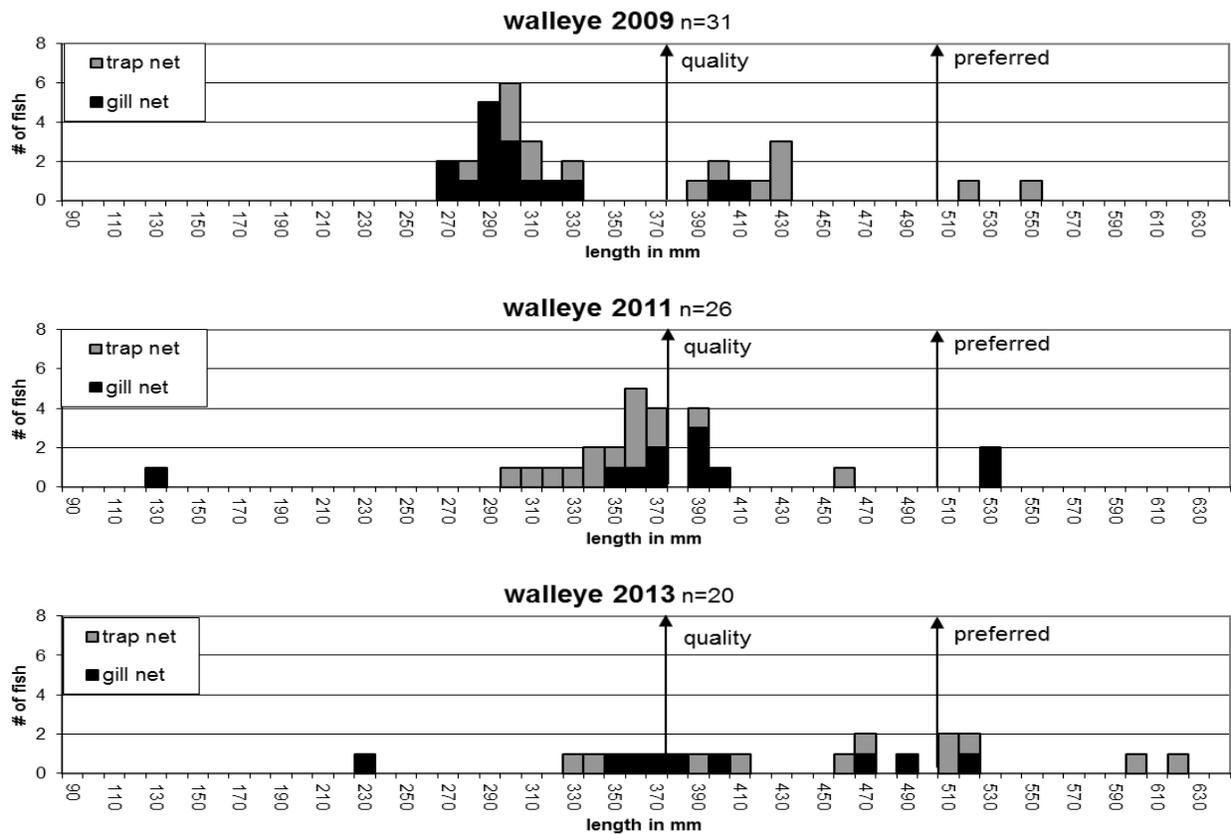


Figure 3. Length frequencies of Walleye collected by gill nets and trap nets in Gardner Lake, during 2009, 2011, 2013.

RECOMMENDATIONS

1. Continue stocking Walleye fingerlings to improve density. Look into stocking advanced fingerling Walleyes to possibly improve recruitment.

2. Place more Christmas Tree structures in the lake, when time allows, to provide spawning habitat and cover for Yellow Perch and other fish species.

APPENDIX

Appendix A. Stocking record for Gardner Lake, Harding County, 1998-2013

Year	Number	Species	Size
1998	107	Channel Catfish	Adult
2003	310	Channel Catfish	Adults
2004	5,759 912	Walleye Channel Catfish	Large fingerling Adult
2005	368	Yellow Perch	Adult
2006	1,000 800	Largemouth Bass Walleye	Fingerling Large fingerling
2007	660 50,000	Black crappie Walleye	Adult Fingerling
2009	59,680	Walleye	Fingerling
2010	20,700	Walleye	Fingerling
2011	19,900	Walleye	Fingerling