

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

2102-F21-R-46

Name: New Wall Lake

County: Pennington

Legal description: Sec 1-2, 11-12, T 1S, R 15E

Location from nearest town: 1.5 mi. S and 1.5 mi. W of Wall, SD

Dates of present survey: June 12-14, September 24, 2013

Date last surveyed: September 25, 2012,

Management classification: Warm water permanent

Primary Species: (game and forage)

1. Largemouth Bass
2. Bluegill
3. Black Crappie
4. Yellow Perch
5. _____

Secondary and other species:

1. White Crappie
2. Golden shiner
3. White Sucker
4. Northern Pike
5. Walleye

PHYSICAL CHARACTERISTICS

Surface Area: 42 acres

Watershed: 3,780 acres

Maximum depth: 24 feet

Mean depth: 12.9 feet

Lake elevation at survey (from known benchmark): -4 feet

Ownership of lake and adjacent lakeshore property:

New Wall Dam was built by the South Dakota Department of Game, Fish and Parks and the department maintains the lake, dam and surrounding property.

Fishing Access

Fishing access on New Wall Lake is good. Shore anglers will find several areas near the water's edge that can be driven to by vehicle. Emergent vegetation can be a problem in late summer for shore access and submerged vegetation in late summer can limit most fishing except in deeper areas accessed by boat or other small watercraft. A new boat ramp was installed in 2009. Also, a boat dock was reconditioned by the Rapid City Area Chapter of Walleyes Unlimited and installed in Spring of 2012.

Observations of Water Quality and Aquatic Vegetation

Emergent vegetation consists of primarily cattails and surrounds most of the lake. Submergent vegetation is plentiful in the shallow, upper ends of the lake in water under six feet.

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

All structures associated with New Wall Lake are in good condition. The boat ramp is situated at the bottom of a steep hill and needs periodic maintenance.

MANAGEMENT OBJECTIVES

Objective 1. Maintain a Largemouth Bass population with a minimum nighttime electrofishing CPUE for stock-length fish of 20, PSD range greater than 50, and PSD-P \geq 30.

BIOLOGICAL DATA

Sampling Effort and Catch

A lake survey was conducted at New Wall Lake from June 12-14, 2013. Sampling consisted of eight trap net nights and one experimental gill net. Trap nets were modified-fyke nets with a 1.3 X 1.5 m (4.2 ft X 4.9 ft) frame, 19.1 mm (0.75 in) mesh and a 1.2 X 23 m (3.9 X 75.5 ft) lead (Table 1, Figure 1). Gill nets were 45.7 m (150 ft) long and 1.8 m (6 ft) deep with six 7.6 m (25 ft) panels of bar mesh sizes: 12.7 mm (0.5 in), 19.1 mm (0.75 in), 25.4 mm (1.0 in), 31.8 mm (1.25 in), 38.1 mm (1.5 in), and 50.8 mm (2.0 in) (Table 2, Figure 1).

Sampling with night boat electrofishing was also conducted at New Wall Lake on September 24, 2013, with a water temp of 62°F. Four sites were completed during the survey for a total of 43.15 minutes (Table 3). Discussion on selected fish species follows and completes this report.

Table 1. Catch data from all species collected in eight trap nets in New Wall Lake, Pennington County, June 12-14, 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> \geq S
Black Crappie	373	46.6 (16.2)	45.0 (15.5)	9 (3)	1 (1)	96.4 (2.5)
Bluegill	702	88.8 (29.7)	88.8 (29.7)	25 (3)	0	102.6 (2.7)
Golden Shiner	3	0.4 (0.4)				
Northern Pike	2	0.4 (0.3)	0.4 (0.3)			99.4 (10.3)
White Crappie	37	4.6 (3.8)	4.6 (3.8)	100	97 (4)	92.6 (1.2)
Yellow Perch	33	4.1 (2.1)	4.0 (2.1)	53 (15)	6 (8)	78.4 (0.7)

Table 2. Catch data from all species collected in one gill net in New Wall Lake, Pennington County, June 12-13, 2013. *Wr* with 90% confidence intervals in parentheses

Species	N	CPUE	CPUE-S	PSD	PSD-P	<i>Wr</i> \geq S
Black Crappie	22	22.0	22.0	0	0	94.0 (2.0)
Bluegill	9	9.0	8.0	0	0	89.0 (0.9)
Golden Shiner	15	15.0	--			
Largemouth Bass	1	1.0	1.0			107.4
Northern Pike	3	3.0	3.0			108.4 (7.5)
Yellow Perch	14	14.0	13.0	0	0	84.7 (5.9)

Black Crappie

Black Crappie abundance increased substantially to 46.6 this survey (Table 1) from 4.6 during the last netting survey in 2011. Size structure was low with a PSD of 9 and a PSD-P of 1. Fish condition was good with a *Wr* of 96.4. Length frequencies, as well as the age and growth data,

show this population is dominated by a large year class from 2011 (Table 3, Figure 1). Growth appears good and is higher than the regional and statewide averages (Table 3).

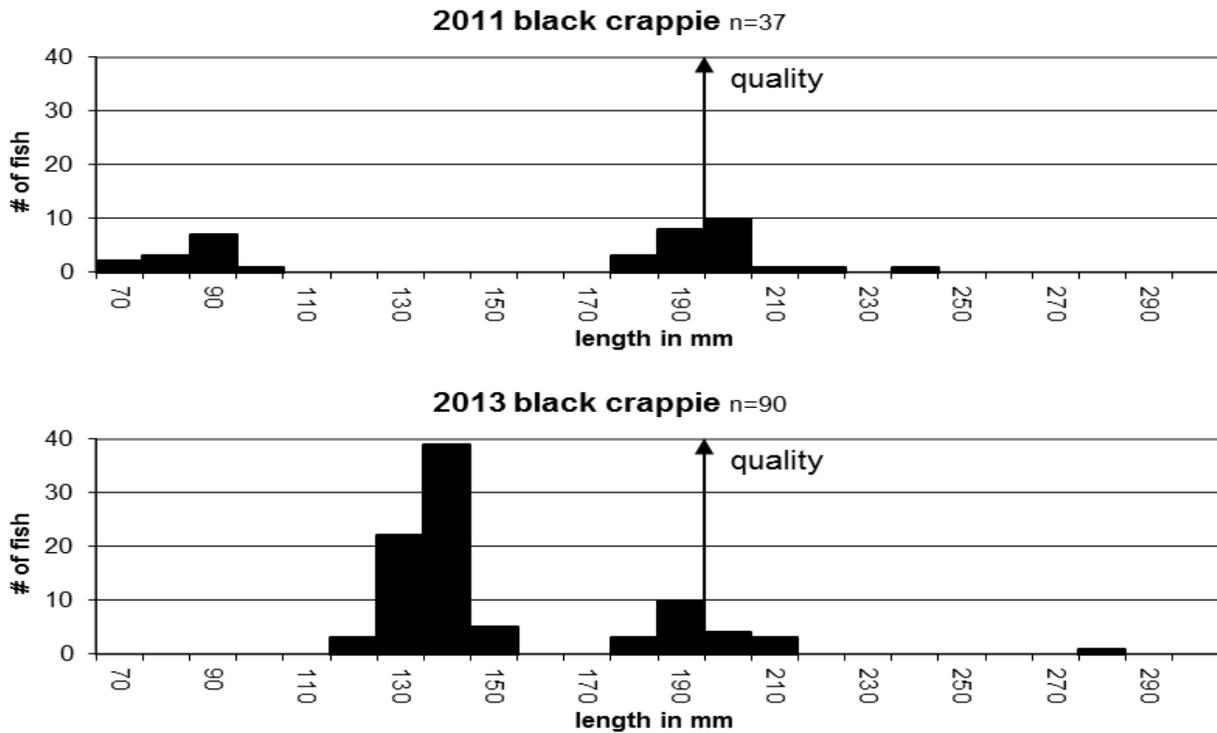


Figure 1. Length frequency histogram of Black Crappies collected by trap nets in New Wall Lake, 2011, 2013.

Table 3. New Wall Lake Black Crappie year class, age in 2013, sample size (N), mean back-calculated total length-at-age, the Region 1 mean length-at-age, and the South Dakota statewide Black Crappie mean length-at-age (Willis et al 2001). Standard errors are in parentheses.

Year Class	Age	N	1	2	3	4	5
2012	1	6	93				
2011	2	279	76	122			
2010	3	83	83	150	185		
2008	5	4	81	180	209	251	279
2013 Pop. mean (SE)		372	83 (4)	151 (17)	197 (12)	251 (0)	279 (0)
Region 1			74 (3)	122 (7)	158 (9)	197 (13)	217 (16)
South Dakota			83 (2)	147 (4)	195 (5)	229 (6)	249 (6)

Bluegill

The Bluegill population followed the same trend as Black Crappie with a large increase in density of small fish. In 2011, CPUE of stock length and larger fish was 9.0, this year it was 88.8 (Table 1 and Table 4). The increase in proportion of small fish dropped Bluegill PSD from 88 in 2011 to 25 this year. Fish condition remains high with a *Wr* for stock length and larger fish of 102.6. The length frequencies show a large year class that dominated the population ranged from 90-120 mm (Figure 2).

Table 4. Composite listing of data for Bluegill collected by trap nets in New Wall Lake, 2002-2013. Total catch (N), CPUE's with 80% confidence intervals in parentheses. PSD, PSD-P, and *Wr* with 90% confidence intervals in parentheses.

Year	N	CPUE-S	PSD	RSD-P	<i>Wr</i> >Stock
2002	245	30.6 (17.6)	90 (3)	9 (3)	93.3 (1.2)
2006	123	15.3 (6.3)	72 (7)	50 (7)	99.7 (5.0)
2009	65	9.3 (6.0)	80 (8)	0	108.6 (1.4)
2011	75	9.0 (3.5)	88 (7)	3 (3)	113.7 (1.7)
2013	702	88.8 (29.7)	25 (3)	0	102.6 (2.7)

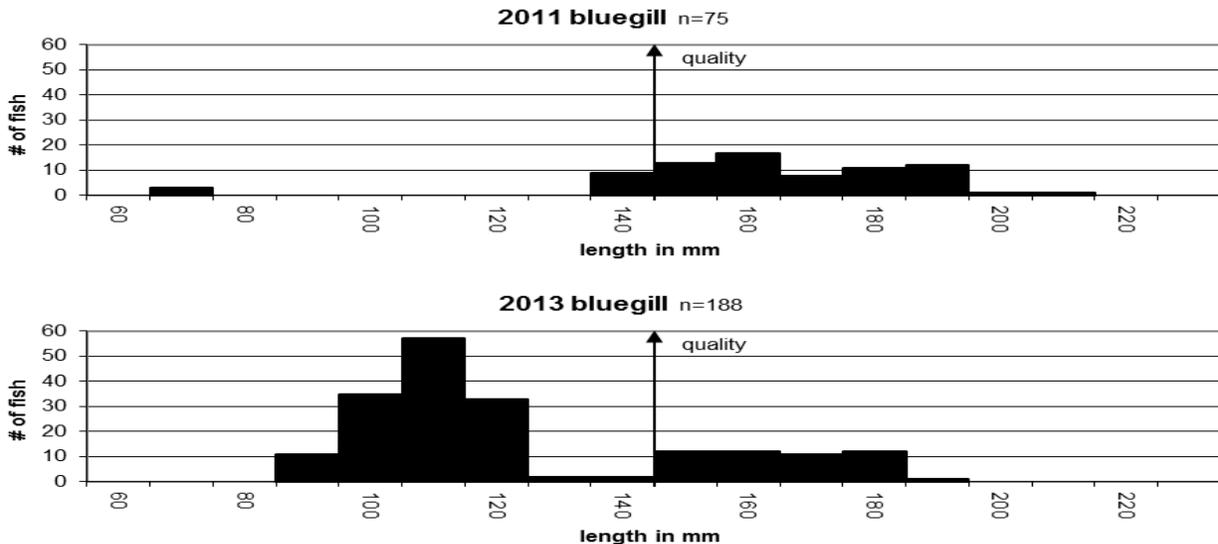


Figure 2. Length frequency histogram of Bluegill collected by trap nets in New Wall Lake, 2011, 2013.

Largemouth Bass

Largemouth Bass CPUE was high at 138.2 fish per hour and 121.3 stock length fish per hour (Table 5). Size structure looks good with a PSD of 44 and a PSD-P of 22. Last year, CPUE was 292.6 with a PSD of 69 and a PSD-P of 9. Fish condition was the highest recorded in recent history with an average *Wr* for stock length and larger fish of 115.6. The length frequency shows good recruitment and a balanced population (Figure 3). CPUE numbers are exceeding management objectives. PSD and PSD-P numbers are a little under management objectives which is probably due to the large number of young fish just over stock length.

Table 5. Composite listing of data for Largemouth Bass collected by electrofishing in New Wall Lake, 2005-2013. Total catch (N), pedal time (seconds), CPUE's with 80% confidence intervals in parentheses. PSD, PSD-P, and *Wr* with 90% confidence intervals in parentheses.

Year	N	Pedal Time (sec)	CPUE	CPUE-S	PSD	PSD-P	<i>Wr</i> ±S
2005	45	3,484	45.9 (15.8)	43.7 (15.3)	79 (11)	28(12)	103.0 (1.4)
2006	16	1,700	34.8 (22.0)	13.2 (8.6)	50 (45)	17 (33)	106.1 (5.1)
2007	68	1,719	146.3 (79.6)	23.6 (16.8)	55 (28)	9 (17)	103.3 (5.0)
2008	43	3,000	51.6 (11.1)	42.0 (12.7)	49 (15)	26 (13)	103.3 (2.0)
2010	92	3,283	103.5 (21.8)	76.4 (17.7)	18 (8)	10 (7)	105.1 (0.2)
2011	77	3,600	77.0 (18.8)	43.0 (20.4)	33 (13)	12 (9)	102.3 (0.4)
2012	125	1,597	292.6 (167.7)	247.9 (142.1)	69 (8)	9 (5)	113.1 (0.9)
2013	101	2,589	138.2 (34.9)	121.3 (35.8)	44 (9)	22 (8)	115.6 (3.2)

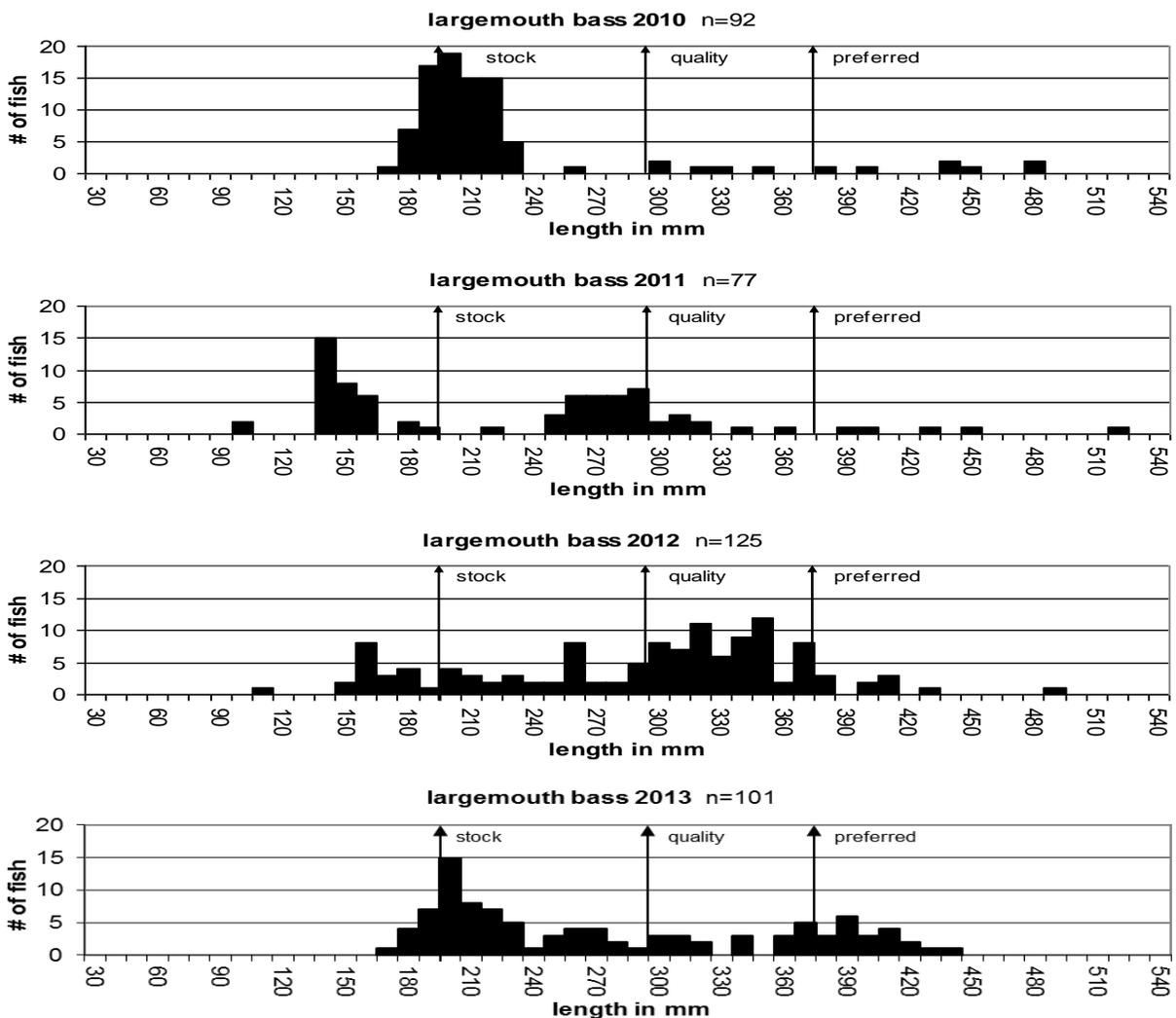


Figure 3. Length frequencies of Largemouth Bass collected by electrofishing in New Wall Lake, 2010-2013.

Yellow Perch

Yellow Perch numbers have dropped substantially from the last two surveys. Gill net CPUE was 13.0, which is the lowest recorded in recent history (Tables 2 and 6). It appears the large year class present in 2011 has nearly died out, possibly from natural mortality, or been removed by anglers. The gill net did not sample any Yellow Perch over quality length. The trap nets caught 33 of which most were over quality length (Figure 4). Fish condition was low with a Wr of 84.7

Table 6. Composite listing of data for Yellow Perch collected by gill nets in New Wall Lake, 2002-2013. Total catch (N), CPUE's with 80% confidence intervals in parentheses. PSD, PSD-P, and Wr with 90% confidence intervals in parentheses.

Year	N	CPUE-S	PSD	RSD-P	$Wr > Stock$
2002	87	43.5 (127.7)	5 (5)	0	85.0 (0.2)
2006	79	39.5 (16.9)	8 (5)	0	90.3 (8.8)
2009	252	126.0 (190.8)	1 (1)	0	96.0 (0.9)
2011	136	136.0 (--)	25 (6)	0	98.0 (1.1)
2013	14	13.0	0	0	84.7 (5.9)

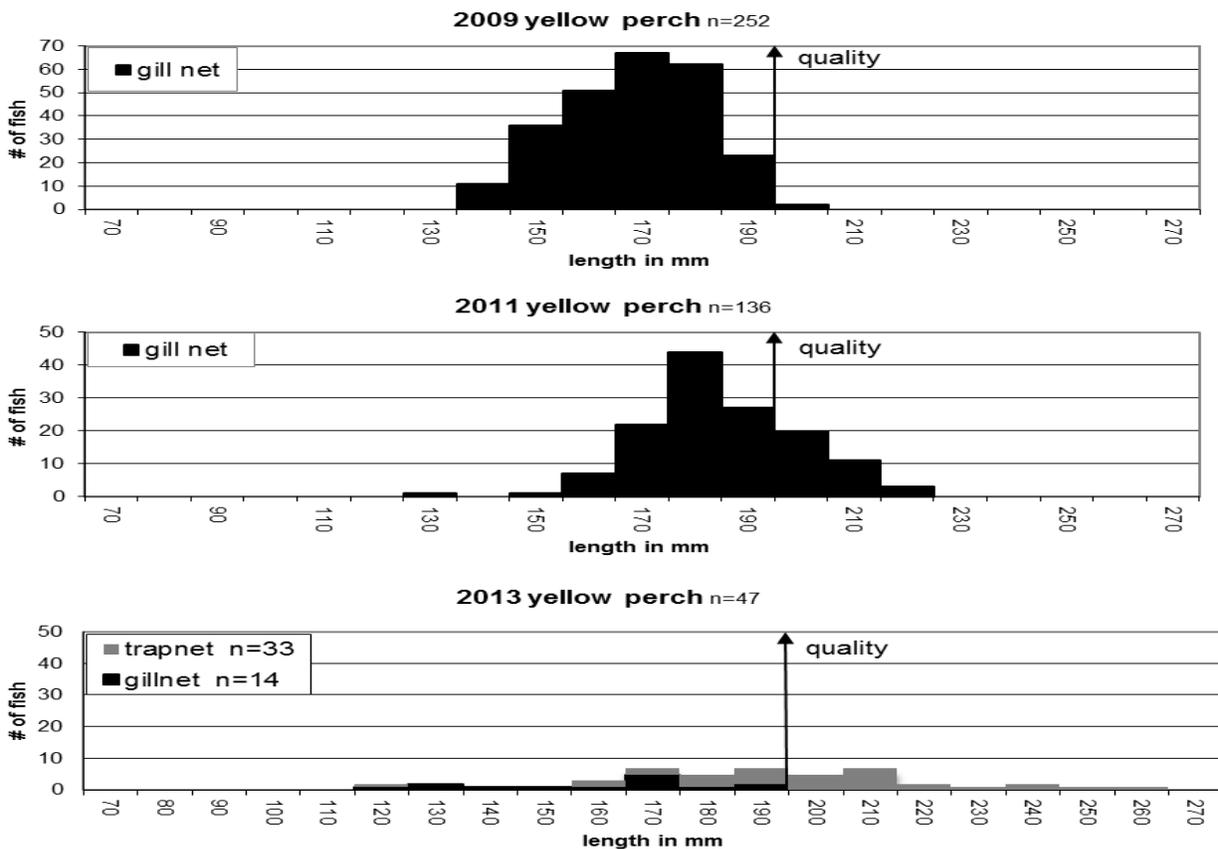


Figure 4. Length frequencies of Yellow Perch collected in New Wall Lake, 2009, 2011, 2013.

RECOMMENDATIONS

1. Continue to conduct netting surveys in New Wall Lake on an as needed basis. Conduct electrofishing surveys annually to assess the Largemouth Bass population and effectiveness of the special regulation.

LITERATURE CITED

Willis, D.W., D.A. Isermann, M.J. Hubers, B.A. Johnson, W.H. Miller, T.R. St. Sauver, J.S. Sorenson, E.G. Unkenholz, and G.A. Wickstrom. 2001. Growth of South Dakota Fishes: A Statewide Summary with means by region and Water Type. Special Report. South Dakota Department of Game, Fish and Parks. Pierre, South Dakota.

APPENDIX

Appendix A. Stocking records for New Wall Lake, Pennington County, 1994-2013.

Year	Number	Species	Size
1994	4,300	Largemouth bass	Fingerling
1995	400	Walleye	Fingerling
1996	4,300	Largemouth bass	Fingerling
	1,200	Walleye	Fingerling
1997	4,300	Largemouth bass	Fingerling
1998	4,300	Largemouth bass	Fingerling
1999	3,000	Largemouth bass	Fingerling
2001	18	Black crappie	Adult
	50	Bluegill	Adult
2007	150	Largemouth bass	Adult
2009	3700	Largemouth bass	Fingerling