SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

2102-F21-R-46

Name: Opal Lake **County:** Meade

Legal description: Sec 16, T 11N, R 14E
Location from nearest town: 17 miles west, 9 miles south of Faith, SD
Dates of present survey: June 24-25, 2013
Date last surveyed: June 27-29, 2011
Management classification: Warmwater permanent

Primary Species: (game and forage)
1. Yellow Perch
2. Northern Pike
3. Bluegill

Secondary and other species:
1. Largemouth Bass
2. Black Bullhead

PHYSICAL CHARACTERISTICS

Surface Area: 31.3 acres **Watershed:** 4,500 acres
Maximum depth: 18 feet **Mean depth**: 7.5 feet
Lake elevation at survey (from known benchmark): -4 feet

Ownership of lake and adjacent lakeshore property:

Opal Lake is situated on 200 acres of Game Production Area owned and managed by the South Dakota Department of Game, Fish and Parks. The entire acreage is fenced with an autogate for access. Access to the GPA is provided along a section line trail. Access is restricted to fair weather; the road is very limited for travel during wet periods.

Fishing Access

Opal Lake is accessible by a two track trail that is good when dry. A cement plank boat ramp offers boat access. Shore fishing access is limited by emergent vegetation that surrounds most of the lake. The best shore access is along the dam grade where the water drops off quickly.

Observations of Water Quality and Aquatic Vegetation

Rooted aquatic vegetation consists of bulrushes and cattails. The vegetation covers approximately 90% of the shoreline. Submerged vegetation is excessive from mid summer until freeze up in all water under eight feet. No other pollution problems were identified by the department during the 2013 survey.

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

The Opal Dam spillway and boat ramp were rebuilt in 1994 and are in good conditon.

MANAGEMENT OBJECTIVES

Objective 1. Maintain a high quality panfish (Bluegill, Black Bullhead, and Yellow Perch) fishery.

Strategy 1a. Maintain PSD's greater than 50 and PSD-P's greater than 10 for at least two of the panfish species.

BIOLOGICAL DATA

Sampling Effort and Catch

Trap nets and an experimental gill net were used on June 24-25, 2013 to sample adult fish populations in the reservoir (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 net was 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), 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). The net sampling consisted of four trap net nights and one gill net night 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 fish species collected in four trap nets in Opal Lake, Meade County, June 24-25, 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	*Wr* ≥ S
Black Bullhead	1,404	351.0 (214.8)	179.0 (104.7)	9 (2)	0	--
Bluegill	46	11.5 (10.8)	11.5 (10.8)	100	85 (9)	111.5 (0.3)
Northern Pike	12	3.0 (1.2)	2.5 (1.1)	60 (30)	20 (24)	84.2 (3.8)

Table 2. Catch data from all fish species collected in one experimental gill net in Opal Lake, Meade County, June 24-25, 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	*Wr* ≥ S
Black Bullhead	45	45.0 (--)	43.0 (--)	14 (9)	0	89.5 (1.4)
Northern Pike	9	9.0 (--)	9.0 (--)	89 (21)	78 (28)	91.6 (7.7)

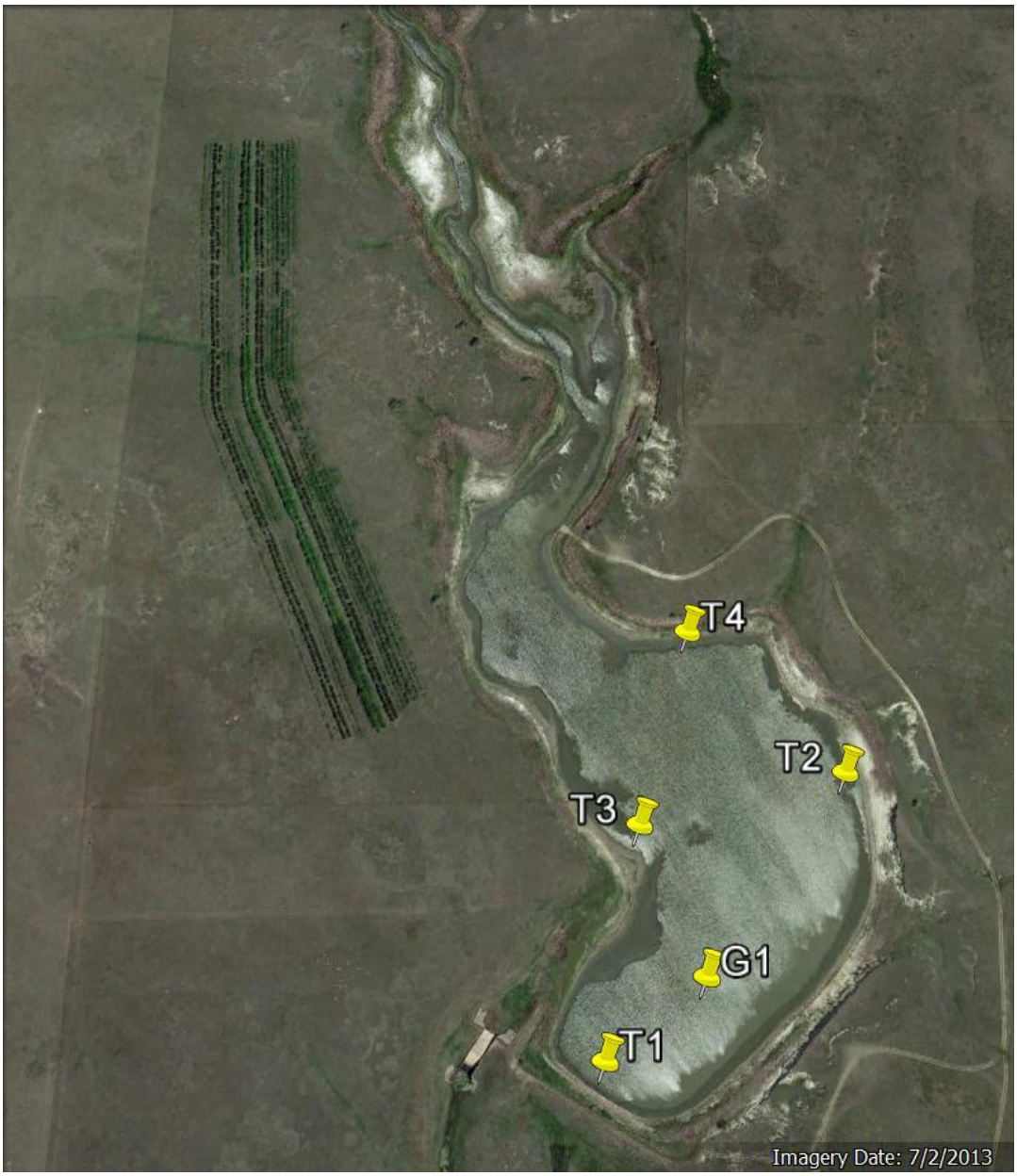

Figure 1. Map of Opal Lake net locations in 2013.

Bluegill

The Bluegill population is meeting the management objectives with a PSD of 100 and a PSD-P of 85 (Tables 1 and 3). Trap net CPUE was 11.5, an increase from 0.6 per net in 2011. Fish condition remains excellent with a *Wr* for stock length and larger fish at 111.5. The length frequency, however, shows very little recruitment (Figure 2).

Table 3. Composite listing of data for Bluegill collected by trap nets in Opal Lake, 2010-2011, 2013. CPUE's with 80% confidence intervals in parentheses. PSD, PSD-P and *Wr* with 90% confidence intervals in parentheses

Year	N	CPUE	CPUE-S	PSD	PSD-P	*Wr*≥S
2010	2	0.5 (0.5)	0.5 (0.5)	--	--	112.0 (--)
2011	5	0.6 (0.7)	0.6 (0.7)	--	--	125.1 (8.6)
2013	46	11.5 (10.8)	11.5 (10.8)	100	85 (9)	111.5 (0.3)

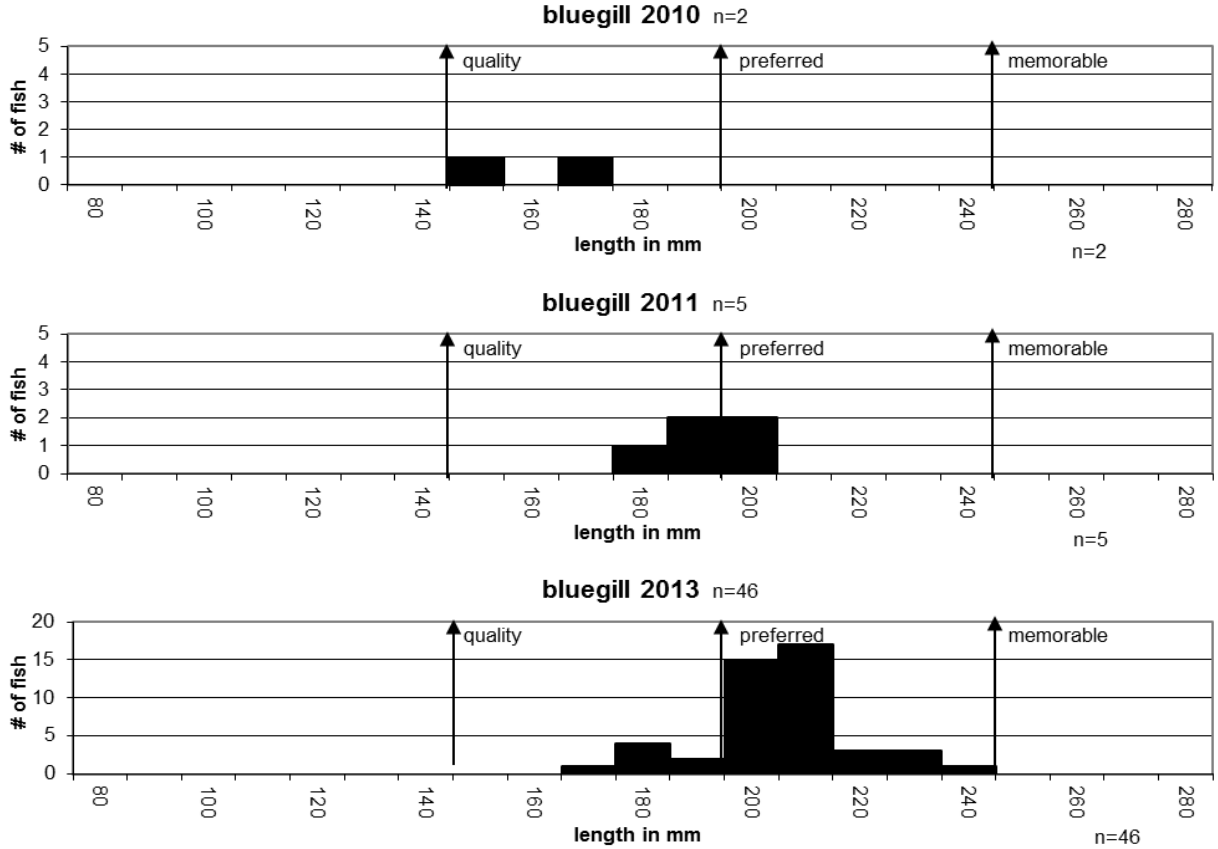

Figure 2**.** Length frequency histogram of Bluegill collected from trap nets in Opal Lake 2010-2011, 2013.

Black Bullhead

Black Bullhead density is extremely high with a trap net CPUE of 351.0 and gill net CPUE of 45.0 (Tables 1 and 2). Stock indices were low with a PSD of 9 and a PSD-P of 0, well below management objectives. Fish condition was average with a *Wr* of 89.5. In 2011, CPUE was 25.6 with a PSD of 13 and a PSD-P of zero. The length frequency histogram shows good recruitment with multiple year classes likely present (Figure 3).

Table 4. Composite listing of data for Black Bullhead collected by trap nets in Opal Lake, 2010-2011, 2013. CPUE's with 80% confidence intervals in parentheses. PSD, PSD-P and *Wr* with 90% confidence intervals in parentheses

Year	N	CPUE	CPUE-S	PSD	PSD-P	*Wr*≥S
2010	20	5.0 (5.0)	4.5 (4.1)	0	0	82.5 (0.6)
2011	205	25.6 (7.5)	23.9 (6.9)	13 (4)	0	88.0 (1.5)
2013	1,404	351.0 (214.8)	179.0 (104.7)	9 (2)	0	*89.5 (1.4)

*gill net data

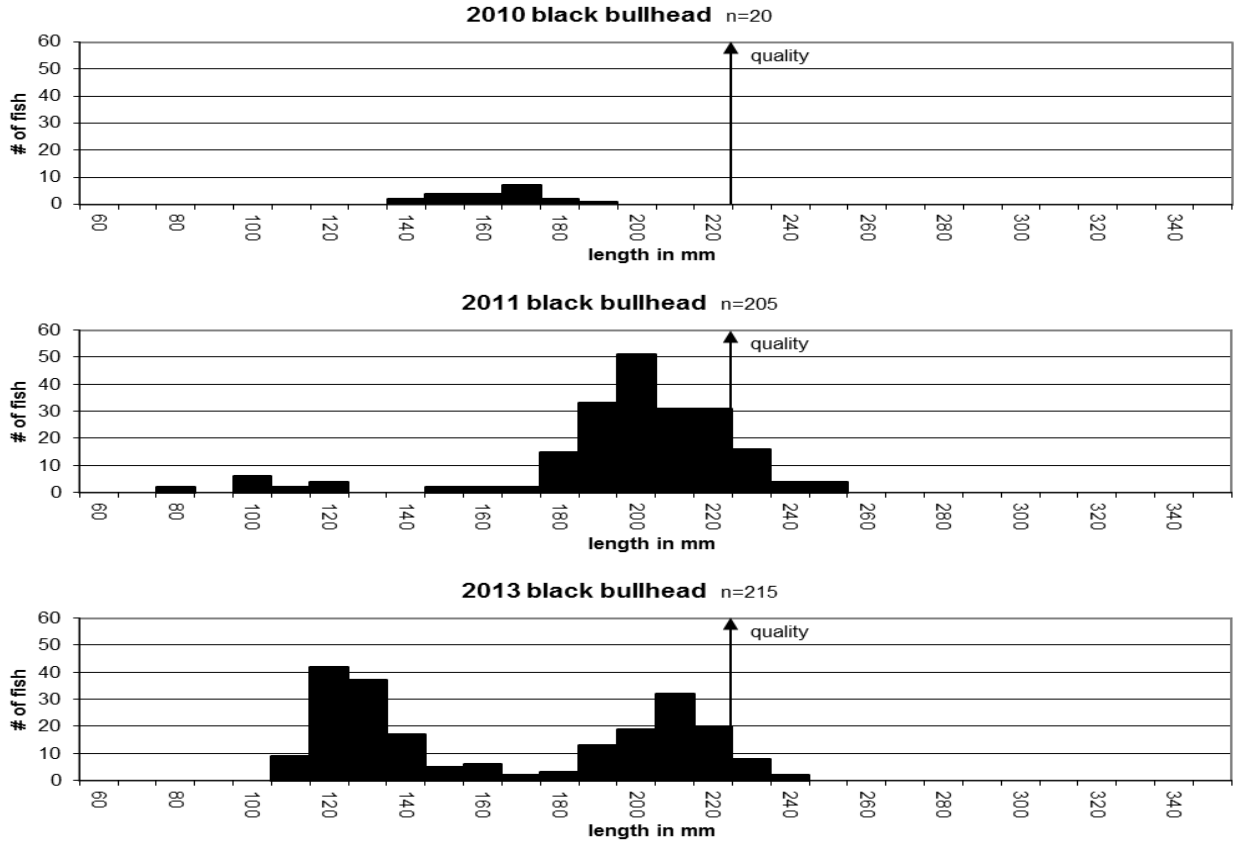

Figure 3. Length frequencies of Black Bullhead collected from trap nets in Opal Lake 2010-2011, 2013.

Northern Pike

The Northern Pike population remains strong with a gill net CPUE of 9.0 and a trap net CPUE of 3.0. The length frequency histogram shows a balanced population with multiple year classes (Figure 5). Fish condition was good with a *Wr* of 91.6 for the gill net sample and 84.2 for the trap net sample.

Table 5. Composite listing of data for Northern Pike collected in Opal Lake, 2010-2011, 2013. CPUE's with 80% confidence intervals in parentheses and *Wr* with 90% confidence intervals in parentheses.

Year	N	trap net CPUE	gill net CPUE	*Wr*≥S
2010	14	1.0 (0.7)	10.0 (--)	92.2 (3.6)
2011	34	1.4 (0.6)	11.5 (10.8)	88.9 (3.2)
2013	21	3.0 (1.2)	9.0 (--)	91.6 (7.7)

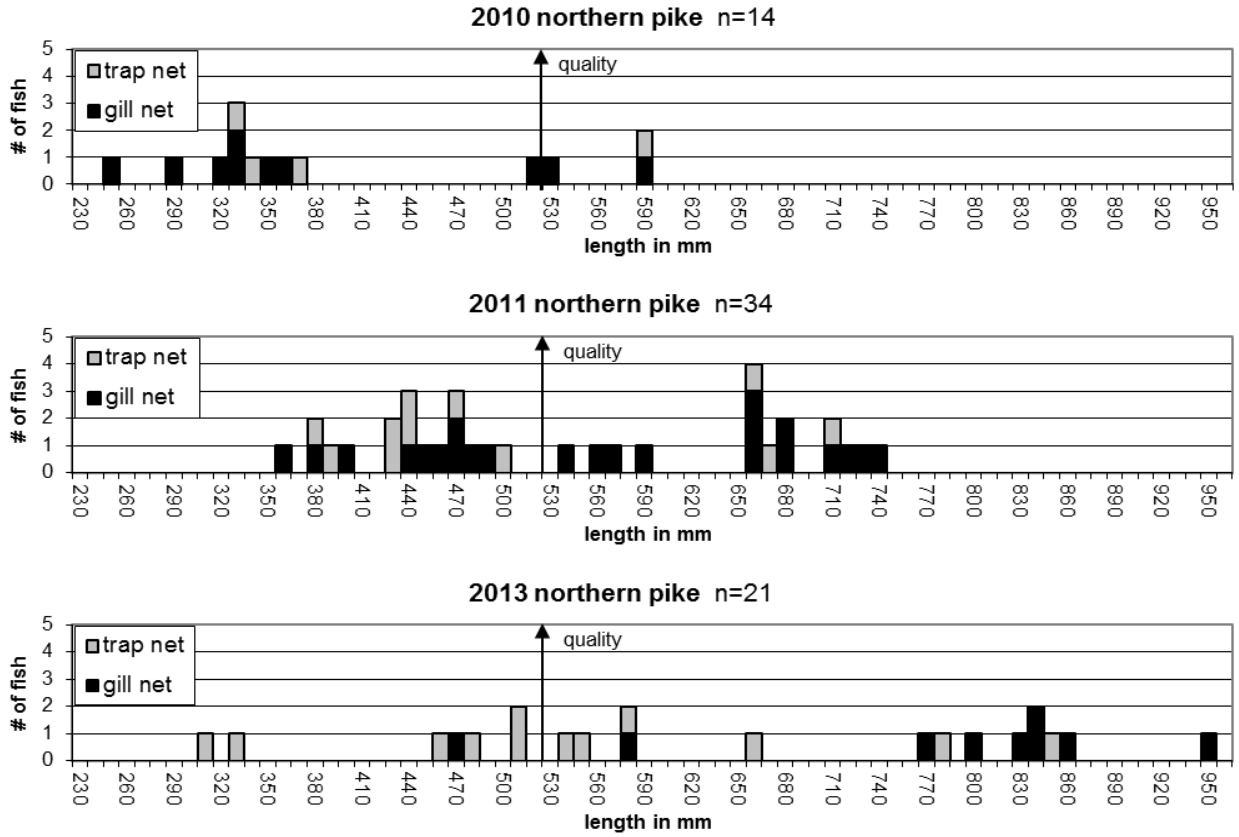

Figure 5. Length frequency histogram of Northern Pike collected by trap nets and gill nets in Opal Lake, 2010-2011, 2013.

RECOMMENDATIONS

1. Stock adult Largemouth Bass when available to increase predation on over abundant Black Bullhead.

2. Place Christmas tree reefs in to provide Yellow Perch spawning habitat and supplement the population with adults in 2014 or when trap and transfer allows.

3. Resurvey in 2015, and include Black Bullhead removal when time allows.

APPENDIX

Appendix A. Stocking record for Opal Lake, Meade County, 2007-2013.

Year	Number	Species	Size
2007-lake was dry			
2008	192,500	Northern Pike	Fry
	20	Bluegill	Adult
	200	Bluegill	Juvenile
	10,000	Bluegill	Fingerling
	200	Yellow Perch	Adult
2010	200	Yellow Perch	Adult
2011	45	Golden Shiner	Adult
	450	Yellow Perch	Adult
2012	275	Yellow Perch	Adult
	250	Bluegill	Adult
2013	600	Yellow Perch	Adult