

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

2102-F21-R-47

Name: Waggoner Lake

County: Haakon

Legal description: T 1N, R 20E Sec. 1 and T 1N, R 21E Sec. 6

Location from nearest town: 3 miles north of Philip, SD

Dates of present survey: September 23, 2014

Date last surveyed: July 16-18, 2012

Management classification: Warmwater permanent

Primary Species: (game and forage)

1. Largemouth bass
2. Bluegill
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

Secondary and other species:

1. Black crappie
2. Northern pike
3. Yellow perch
4. Green sunfish
5. Walleye
6. Channel catfish
7. Smallmouth bass
8. White sucker

PHYSICAL CHARACTERISTICS

Surface Area: 107 acres

Watershed: 16,600 acres

Maximum depth: 21 feet

Mean depth: 10 feet

Lake elevation at survey (from known benchmark): full

Ownership of lake and adjacent lakeshore property:

The State of South Dakota has an easement for public access up to 12 feet above the high water mark. A majority of the lakeshore property is privately owned with small portions owned by the city of Philip and Haakon County.

Fishing Access

Waggoner Lake is typical of most small impoundments in the area with relatively poor shore fishing access due to either heavy vegetation or steep cut banks inhibiting shore angling. The dam grade and boat ramp offer the best access to the water edge and are popular areas where most anglers fish. Waggoner Lake has a good boat ramp and a recently installed boat dock that was provided by the Rapid City Chapter of Walleyes Unlimited.

Observations of Water Quality and Aquatic Vegetation

Emergent vegetation is limited to bulrushes and cattails, which are abundant in the bays and inlet areas of the lake. Submerged vegetation is a problem in mid-summer and more than fifty percent of the shoreline may be covered by submergent vegetation. The northern part of the lake has become heavily silted. The lake has also suffered heavy algal blooms through the summer, most likely due to excessive nutrients loading up in the lake. No other pollution problems have been noticed by department personnel during lake surveys.

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

A new boat ramp was installed during 2004 and a skid type boat dock was recently provided by the Rapid City Chapter of Walleye Unlimited

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 50-80, and PSD-P \geq 30.

BIOLOGICAL DATA

Sampling Effort and Catch

Sampling with night boat electrofishing was conducted at Waggoner Lake on September 23, 2014, when surface water temp was 67°F. Six sites were completed during the survey for a total of 60.0 minutes (Table 1).

Largemouth bass

Waggoner Lake has a special length restriction requiring anglers to release all bass between 14 and 18 inches and they are allowed to only keep one bass over 18 inches with their daily limit. This regulation appears to be doing well as the largemouth bass population continues to thrive in Waggoner Lake. During 2014 the night electrofishing survey produced a CPUE of 76.0 and a CPUE-S of 74.0 (Table 1). This is well above the management objective of 20 stock length fish per hour. Most of the bass captured were over 14 inches and size structure was high with a PSD of 85 with a PSD-P of 36 (Figure 1, Table 1). Fish condition was also high with a *Wr* of 104.3. These numbers are all exceeding management objectives. Growth was near the regional average, a little below the statewide average (Table 2).

Table 1. Composite listing of data for largemouth bass collected by electrofishing in Waggoner Lake, 2001-2008, 2010-2011, 2014. Total catch (N), pedal time (seconds), CPUE's (80% confidence intervals in parentheses) and PSD, PSD-P, and *Wr* (90% confidence intervals in parentheses).

| Year | N | Pedal Time (sec) | CPUE | CPUE-S | PSD | PSD-P | <i>Wr</i> \geq S |
|------|-----|------------------|--------------|--------------|---------|---------|--------------------|
| 2001 | 56 | 6,028 | 33.5 (4.6) | 26.3 (4.6) | 52 (13) | 0 | 100.4 (1.6) |
| 2002 | 24 | 2,959 | 29.2 (14.6) | 29.2 (14.6) | 71 (16) | 4 (7) | 110.3 (2.7) |
| 2003 | 39 | 3,800 | 38.5 (21.5) | 18.8 (10.7) | 95 (9) | 58 (20) | 115.0 (3.1) |
| 2004 | 88 | 3,600 | 88.0 (38.1) | 57.0 (20.7) | 46 (11) | 35 (11) | 110.6 (2.4) |
| 2005 | 77 | 3,898 | 71.0 (12.0) | 59.7 (10.2) | 58 (11) | 32 (10) | 112.6 (1.2) |
| 2006 | 57 | 3,000 | 68.4 (11.9) | 48.0 (10.9) | 63 (14) | 25 (12) | 112.2 (2.4) |
| 2007 | 68 | 2,828 | 90.5 (40.7) | 86.6 (38.9) | 69 (10) | 41 (11) | 112.7 (1.7) |
| 2008 | 42 | 3,600 | 42.0 (7.9) | 38.0 (7.4) | 79 (11) | 41 (14) | 109.7 (2.3) |
| 2010 | 114 | 3,839 | 113.1 (51.4) | 71.4 (30.1) | 6 (5) | 6 (5) | 104.8 (0.5) |
| 2011 | 141 | 3,600 | 141.0 (30.7) | 130.0 (31.0) | 18 (6) | 13 (5) | 105.3 (0.6) |
| 2014 | 76 | 3,600 | 76.0 (23.1) | 74.0 (21.4) | 85 (7) | 36 (10) | 104.3 (1.4) |

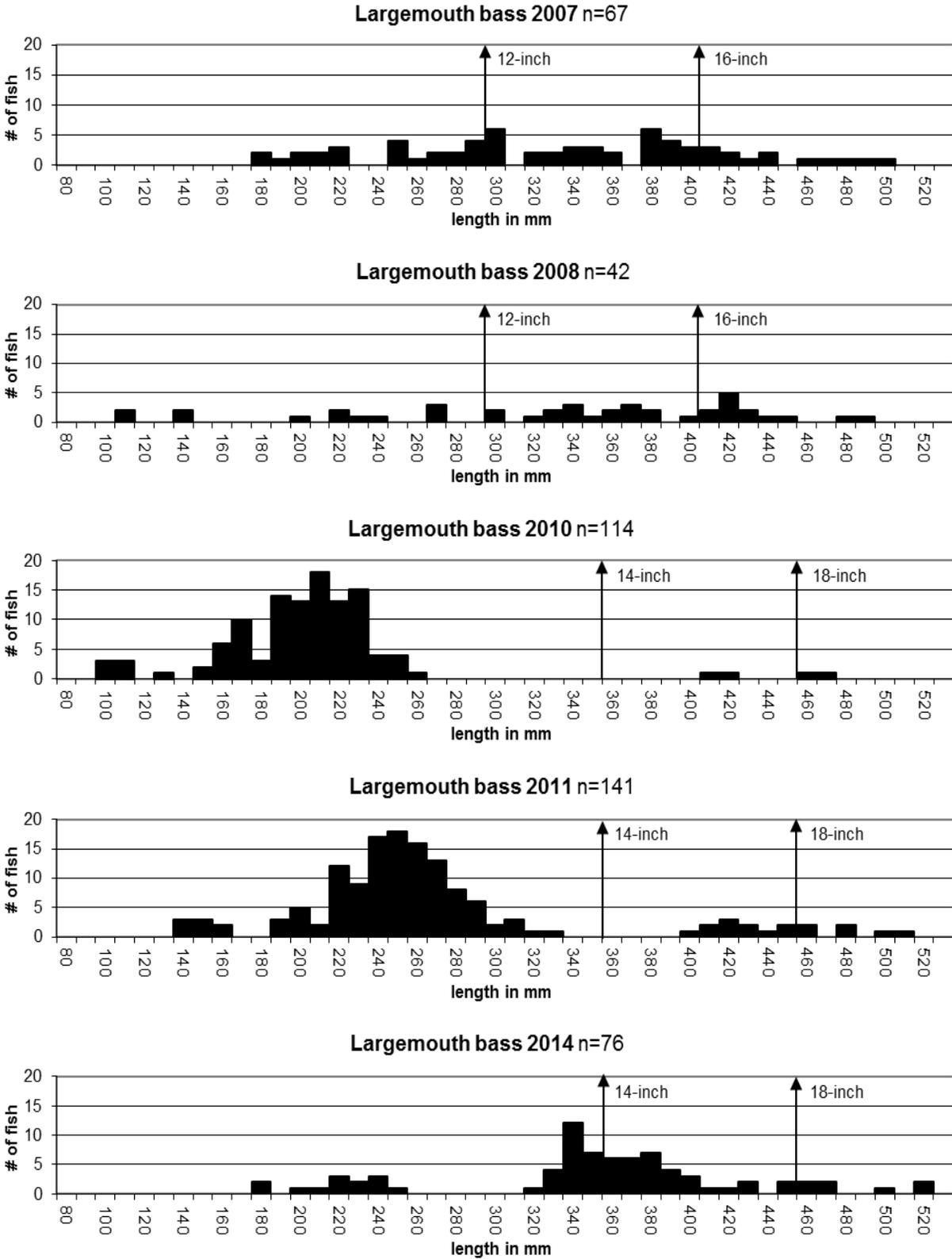


Figure 1. Lengths of largemouth bass collected during night electrofishing from Waggoner Lake, Haakon County, 2007-2008, 2010-2011, 2014.

Table 2. Waggoner Lake largemouth bass year class, age in 2014, sample size (N), mean back-calculated total length-at-age, the Region 1 mean length-at-age, and the South Dakota state-wide largemouth bass mean length-at-age. Standard errors are in parentheses.

| Year Class | Age | N | 1 | 2 | 3 | 4 | 5 | 6 |
|---------------------|-----|----|--------|----------|----------|----------|----------|---------|
| 2013 | 1 | 8 | 102 | | | | | |
| 2012 | 2 | 4 | 88 | 162 | | | | |
| 2010 | 4 | 11 | 91 | 151 | 227 | 299 | | |
| 2009 | 5 | 32 | 75 | 134 | 218 | 279 | 329 | |
| 2008 | 6 | 4 | 79 | 119 | 216 | 281 | 314 | 373 |
| 2014 Pop. mean (SE) | | 59 | 87(5) | 141 (10) | 220 (3) | 286 (6) | 321 (8) | 373 (0) |
| Region 1 | | | 78 (4) | 154 (10) | 214 (11) | 272 (13) | 318 (13) | |
| South Dakota | | | 96 (3) | 182 (6) | 250 (7) | 305 (8) | 342 (8) | |

RECOMMENDATIONS

1. Continue conducting lake surveys at least once every 3 years to evaluate fish populations and determine if management objectives are being met.
2. Continue annual fall night electrofishing to develop long-term trend data of largemouth bass and continue monitoring the smallmouth bass population.
3. Submit this lake for habitat and access improvements (i.e. dredging, steeper shorelines, opening up shoreline cattail areas, and fishing piers)

APPENDICES

Appendix A. Stocking record for Waggoner Lake, Haakon County, 1994-2014.

| Year | Number | Species | Size |
|------|--------|-----------------|------------|
| 1994 | 2,000 | Golden shiner | Adult |
| | 120 | Largemouth bass | Adult |
| 1995 | 4,000 | Largemouth bass | Fingerling |
| 1996 | 4,000 | Largemouth bass | Fingerling |
| 1997 | 12,000 | Largemouth bass | Fingerling |
| 1998 | 12,000 | Largemouth bass | Fingerling |
| 1999 | 6,000 | Largemouth bass | Fingerling |
| 2000 | 12,000 | Largemouth bass | Fingerling |
| 2001 | 905 | Largemouth bass | Adults |
| | 12,620 | Largemouth bass | Fingerling |