

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

2102-F21-R-47

Name: Belvidere Lake

County: Jackson

Legal description: Sec 32, T 2S, R 24E,

Location from nearest town: Within the city limits of Belvidere, South Dakota.

Dates of present survey: October 7, 2014

Date last surveyed: June 10-12, 2013

Management classification: Warmwater permanent

Primary Species: (game and forage)

1. Largemouth bass
2. Bluegill
3. Black bullhead

Secondary and other species:

1. Yellow perch
2. Channel catfish
3. Common carp

PHYSICAL CHARACTERISTICS

Surface Area: 42.3 acres

Watershed: 5,800 acres

Maximum depth: 8-10 feet

Mean depth: 4 feet

Lake elevation at survey (from known benchmark): full

Ownership of lake and adjacent lakeshore property

Belvidere Lake is located on the east edge of the City of Belvidere, SD. The lake is owned by the city. There is some private land near the northern side of the lake.

Fishing Access

There are some areas of emergent vegetation; however, open shorelines around large portions of the lake provide adequate shoreline access. During the later summer months shore angling may be difficult due to the dense submergent vegetation around the lake. Main street Belvidere (Hwy 63) runs through Belvidere Lake. However, to get to an adequate parking area, anglers must turn onto Railway Street, and follow a low maintenance gravel road approximately 300 yards to the east. There is also a place where a small boat could be launched. It appears that the City of Belvidere has begun making some improvements around the lake including a shaded picnic area and a new concrete slab at the boat ramp.

Observations of Water Quality and Aquatic Vegetation

There is emergent and submergent vegetation around Belvidere Lake. Emergent vegetation (mostly rushes and cattails) are around a large portion of the lake. During the later summer months dense submergent vegetation covers much of the shoreline. No apparent pollution problems were observed during the survey.

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

There is a low maintenance gravel road (Railway Street) along the south side of the lake. Belvidere Lake does not have a dock or fishing pier. Improvements have been made at the boat ramp. SDGFP did not inspect the dam or spillway during the survey.

MANAGEMENT OBJECTIVES

Objective 1. To annually work towards developing a balanced largemouth bass/bluegill fishery. Maintain bluegill PSD over 20.

Objective 2. Stock channel catfish to add to angler opportunity and add to predation on overabundant black bullhead and bluegill populations by 2014.

Objective 3. Keep the Local Wildlife Conservation Officer and the public informed of fisheries management activities and solicit their input when planning future changes to the fishery.

BIOLOGICAL DATA

Sampling Effort and Catch

A nighttime electrofishing survey was completed on Belvidere Lake on October 7, 2014 to assess the largemouth bass population. Belvidere Lake was nearly dry during the drought of the mid-2000s. After refilling, it was stocked with largemouth bass and bluegill in 2008 and 2009 and with channel catfish in 2014. The lake does have other species not stocked by SDGFP including black bullhead, common carp and yellow perch.

Largemouth bass

In 2010, 16 largemouth bass were collected in trap nets and none of the fish were over quality length (300 mm; 12 in). There was one largemouth bass collected in the trap nets during the 2013 survey as well and it was under stock length.

The 2014 electrofish survey, which included 2,040 seconds and four passes, resulted in a total of 51 largemouth bass collected (Table 1). The largemouth bass CPUE and CPUE-S was 89 and 57, respectively. The PSD and PSD-P was 100 and 62 as well. There appears to be a good population of largemouth bass with multiple year classes and good growth (Figure 1). The $W_{t>S}$ was excellent at 113. Growth through age-5 appears to be slightly slower than the statewide average for largemouth bass in Belvidere Lake (Table 2). There was only one fish collected from the 2011 year class and it grew fast, surpassing the statewide mean by over two inches at age-3.

Scales were not taken from any of the largest fish (>400 mm). However, 13 of the largemouth bass in the sample were over 16 inches, and four of those fish were around five pounds and 19 inches. The five pound fish would likely be age-6 at the oldest, which would coincide with the 2008 stocking. There is abundant forage for those big largemouth bass in the form of bluegills and black bullheads in Belvidere Lake

Table 1. Catch data from largemouth bass collected while electrofishing Belvidere Lake, Jackson County, October 7, 2014. CPUE's with 80% confidence intervals in parentheses. PSD, PSD-P and *Wr* with 95% confidence intervals in parentheses.

N	Pedal Time (sec)	CPUE	CPUE-S	PSD	PSD-P	<i>Wr</i> ≥S
51	2,040	88.8 (30.3)	56.8 (33.5)	100	62 (17)	112.5 (1.7)

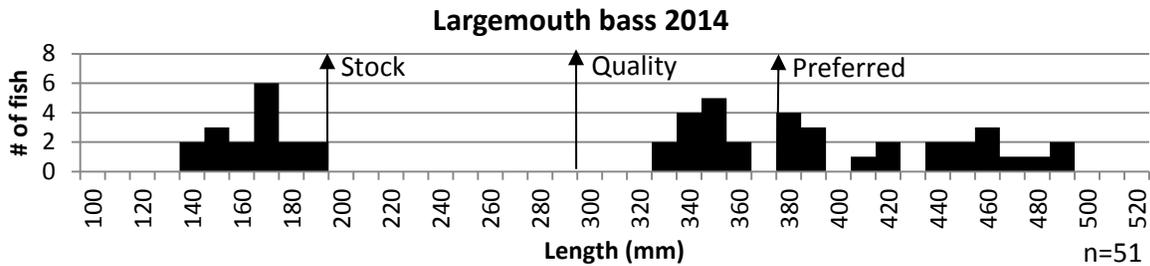


Figure 1. Length frequency for largemouth bass collected during an electrofishing survey of Belvidere Lake on October 7, 2014.

Table 2. Belvidere Lake largemouth bass age in 2014 from electrofishing, sample size (N), mean back-calculated total length-at-age, mean SD length-at-age, and population standard errors (SE) (Willis et al. 2001).

Year Class	Age	N	Age				
			1	2	3	4	5
2013	1	12	89				
2011	3	1	101	160	307		
2010	4	14	94	150	213	308	
2009	5	7	92	157	206	265	332
2014 Mean (SE)			94 (3)	156 (3)	242 (33)	286 (22)	332 (0)
SD Mean (SE)			96 (3)	182 (6)	250 (7)	305 (8)	342 (8)

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.

MANAGEMENT RECOMMENDATIONS

1. Stock largemouth bass and/or bluegill as necessary to maintain the fishery.
2. Conduct surveys as necessary to evaluate stocking success, and to ensure a fishery is maintained, especially after periods of drought or winterkills.
3. Stock additional species, such as channel catfish, to add t angling opportunity.

APPENDIX

Appendix A. Stocking record for Belvidere Lake, Jackson County, 2008-2014.

Year	Number	Species	Size
2008	15,000	Bluegill	Fingerling
2008	2,000	Largemouth bass	Fingerling
2009	5,000	Largemouth bass	Fingerling
2014	100	Channel catfish	Adult