

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Lake Albert, Kingsbury County
2102-F-21-R-47
2014



Figure 1. Lake Albert, Kingsbury County

Legal Description: T112-R53W-Sec. 1-3, 10-12, 14-15, 22

Location from nearest town: 1-1/2 miles east and 1 mile north of Badger, SD

Surface Area: 3,699 acres

Meandered (Y/N): Yes

OHWM elevation: 1652.9

Outlet elevation: 1650.2

Max. depth at outlet elevation: 13 feet

Observed water level: 2 feet low

Contour map available (Y/N): Yes

Watershed area: 250,382 acres

Shoreline length: 17.4 miles

Date set: 2004

Date set: 2004

Mean depth at outlet elevation: 8.8 feet

Volume at outlet elevation: 14,440 acre feet

Date mapped: 2001

DENR beneficial use classifications: (6) warmwater marginal fish life propagation, (7) immersion recreation, (8) limited-contact recreation and (9) wildlife propagation and stock watering.

Introduction

General

Lake Albert was named in 1839 by John C. Fremont, noted explorer, for Col. J. J. Abert of the U.S. Army. The present name is a corruption of “Abert”.

Major inflows include the Mary/John/Norden watershed to the north and the Badger/Thisted watershed from the south. Water outflows to the east to Lake Poinsett then to the Big Sioux River. However, significant precipitation in one portion of the Albert watershed can cause water to temporarily flow in the opposite direction from normal.

Ownership of Lake and Adjacent Lakeshore Properties

Lake Albert is listed as a meandered lake in the State of South Dakota Listing of Meandered Lakes. The South Dakota Department of Game, Fish, and Parks (GFP) owns and manages a Lake Access Area on the east side of the lake and a Game Production Area (GPA) on the west side. The remainder of the shoreline is privately owned.

Fishing Access

The East Access Area features a single lane boat ramp, boat dock, concrete vault toilet, parking lot and shore fishing access (Figure 1). Shore fishing access is also available within the GPA on the west side of the lake.

Water Quality and Aquatic Vegetation

Water temperature during the survey was 22°C (71°F) and water clarity was only 35 cm (14 in) (Table 1). A considerable amount of algae accumulated on the nets and small beds of sago pondweed were observed.

Table 1. Water temperature, Secchi depth and observations/comments on water quality and aquatic vegetation in Lake Albert, Kingsbury County, 2005-2014.

Year	Water Temp °C (°F)	Secchi Depth cm (in)	Observations/Comments (algae, aquatic vegetation, water quality, etc.)
2014	22 (71)	35 (14)	Algae covering nets, small beds of sago
2012	-- (--)	100 (40)	Some sago pondweed, few patches of bulrush
2008	-- (--)	31 (12)	Some sago pondweed and bulrush, flooded trees

Fish Kills

Several fish kills have been recorded on Lake Albert (Table 2). Other fish kills likely occurred during periods of time the lake was not managed due to extremely low water levels.

Table 2. Fish kill history for Lake Albert, Kingsbury County.

Year	Severity	Comments
2004	Moderate	Mostly white bass, catfish, walleye, carp. Water level was 4'.
2001	Light	Small numbers of dead carp and white bass observed.
1997	Severe	A few bullheads, carp, suckers and perch found alive.

Fish Community

Lake Albert's fish community is fairly diverse and comprised of species normally found in shallow natural lakes but occasionally, species like smallmouth bass and channel catfish enter the lake from Lake Poinsett and the Big Sioux River (Table 3).

Table 3. Fish species commonly found in Lake Albert, Kingsbury County.

Game Species	Other Species
Walleye	Bigmouth Buffalo
Yellow Perch	Common Carp
Northern Pike	Spottail Shiner
Channel Catfish	White Sucker
White Bass	
Black Bullhead	
Yellow Bullhead	
Smallmouth Bass	
Orange-spotted Sunfish	

Fish Management

Lake Albert is shallow and prone to severe fluctuations in water levels that limit fisheries management and recreational boating opportunities, sometimes for several consecutive years. The lake is managed primarily for walleye and yellow perch and it usually produces a good, naturally-produced northern pike fishery due to frequent flooding of terrestrial vegetation. Walleye abundance is maintained by fry stockings (Table 4) but immigration from Lake Poinsett and the Big Sioux River also contributes to the fishery. Yellow perch abundance is maintained naturally but they may be stocked following severe winter fish kills.

Table 4. Stocking history for Lake Albert, Kingsbury County, 2005-2014.

Year	Number	Species	Size
2007	3,700,000	Walleye	Fry
2008	3,700,000	Walleye	Fry
	242,520	Yellow Perch	Fingerling
2009	3,700,000	Walleye	Fry
2011	3,700,000	Walleye	Fry
2014	1,850,000	Walleye	Fry

Methods

Lake Albert was sampled on June 30-July 1, 2014 with three overnight gill-net sets. The gill nets were 45.7 m long x 1.8 m deep (150 ft long x 6 ft deep) with one 7.6 m (25 ft) panel each of 13, 19, 25, 32, 38 and 51-mm-bar-mesh ($\frac{1}{2}$, $\frac{3}{4}$, 1, $1\frac{1}{4}$, $1\frac{1}{2}$, and 2 in) monofilament netting.

Results and Discussion

Net Catch Results

Yellow perch and walleye comprised a substantial portion (77.6%) of the gill net sample in 2014 (Table 5).

Table 5. Total catch from 3 overnight gill nets set in Lake Albert, Kingsbury County, June 30-July 1, 2014.

<i>Species</i>	<i>#</i>	<i>%</i>	<i>CPUE</i> ¹	<i>80% C.I.</i>	<i>Mean CPUE*</i>	<i>PSD</i>	<i>RSD-P</i>	<i>Mean Wr</i>
Yellow perch	74	59.2	24.7	<u>+6.2</u>	19.2	18	15	104
Walleye	23	18.4	7.7	<u>+1.1</u>	8.4	91	0	96
Spottail shiner	8	6.4	2.7	<u>+1.9</u>	1.1	--	--	--
Black bullhead	6	4.8	2.0	<u>+1.3</u>	2.6	--	--	--
Northern pike	6	4.8	2.0	<u>+1.3</u>	2.7	--	--	--
White sucker	4	3.2	1.3	<u>+0.9</u>	1.1	--	--	--
Common carp	3	2.4	1.0	<u>+0.7</u>	0.9	--	--	--
O. S. Sunfish	1	0.8	0.3	<u>+0.4</u>	0.3	--	--	--

*10 years (2005-2014)

Table 6. CPUE by length category for selected species sampled with gill nets in Lake Albert, Kingsbury County, June 30-July 1, 2014.

<i>Species</i>	<i>Substock</i>	<i>Stock</i>	<i>S-Q</i>	<i>Q-P</i>	<i>P+</i>	<i>All sizes</i>	<i>80% C.I.</i>
Yellow perch	2.7	22.0	18.0	0.7	3.3	24.7	<u>+6.2</u>
Walleye	0.3	7.3	0.7	6.7	--	7.7	<u>+1.1</u>
Spottail shiner*	--	--	--	--	--	2.7	<u>+1.9</u>
Black bullhead	0.3	1.7	1.3	--	0.3	2.0	<u>+1.3</u>
Northern pike	--	2.0	0.3	1.3	0.3	2.0	<u>+1.3</u>
White sucker	--	1.3	1.0	--	0.3	1.3	<u>+0.9</u>
Common carp	--	1.0	--	--	1.0	1.0	<u>+0.7</u>
O. S. sunfish*	--	--	--	--	--	0.3	<u>+0.4</u>

*No length categories established. Length categories can be found in Appendix A.

¹ See Appendix A for definitions of CPUE, PSD, RSD, RSD-P and mean Wr.

Table 7. Gill-net CPUE for selected fish species sampled in Lake Albert, Kingsbury County, 2005-2014.

<i>Species</i>	<i>2005</i>	<i>2006</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>	<i>2014</i>
Black Bullhead				2.4				3.3		2.0
Channel Catfish				--				0.7		--
Common Carp				0.7				1.0		1.0
Northern Pike				1.7				4.3		2.0
Spottail Shiner				--				0.7		2.7
Walleye				2.7				14.7		7.7
White Bass				--				0.7		--
White Sucker				0.3				1.7		1.3
Yellow Bullhead				--				--		--
Yellow Perch				--				13.7		24.7

Walleye

Management Objective

- Maintain a walleye population with a total gill net CPUE of at least 15.

Management Strategy

- Stock walleye fry at the rate of 500/acre (1,849,500) as needed to achieve the management objective.

Although walleye abundance is well below the management objective (Table 8), the majority of the fish sampled were 38-51 cm (15-20 in) long (Table 10, Figure 2). A few substock-length fish were sampled indicating some natural reproduction or stocking survival (Table 9).

Table 8. CPUE, PSD, RSD-P, and mean Wr for all walleye sampled with gill nets in Lake Albert, Kingsbury County, 2005-2014. Columns for stocked years are shaded.

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
CPUE				2.7				14.7		7.7
PSD				--				23		91
RSD-P				--				0		0
Mean Wr				--				85		96

Table 9. Walleye stocked into Lake Albert, Kingsbury County, 2005-2014.

Year	Number	Size
2007	3,700,000	Fry
2008	3,700,000	Fry
2009	3,700,000	Fry
2011	3,700,000	Fry
2014	1,850,000	Fry

Table 10. CPUE by length category for walleye sampled with gill nets in Lake Albert, Kingsbury County, 2012, 2014.

Year	Substock <25 cm (10 in)	Stock 25 cm (10 in)	S-Q 25-38 cm (10-15 in)	Q-P 38-51 cm (15-20 in)	P+ >51 cm (20 in)	All Lengths	80% C.I.
2008	1.0	0.0	1.7	0.0	0.0	1.7	--
2012	3.0	11.7	9.0	2.7	0.0	14.7	+2.1
2014	0.3	7.3	0.7	6.7	0.0	7.7	+1.1

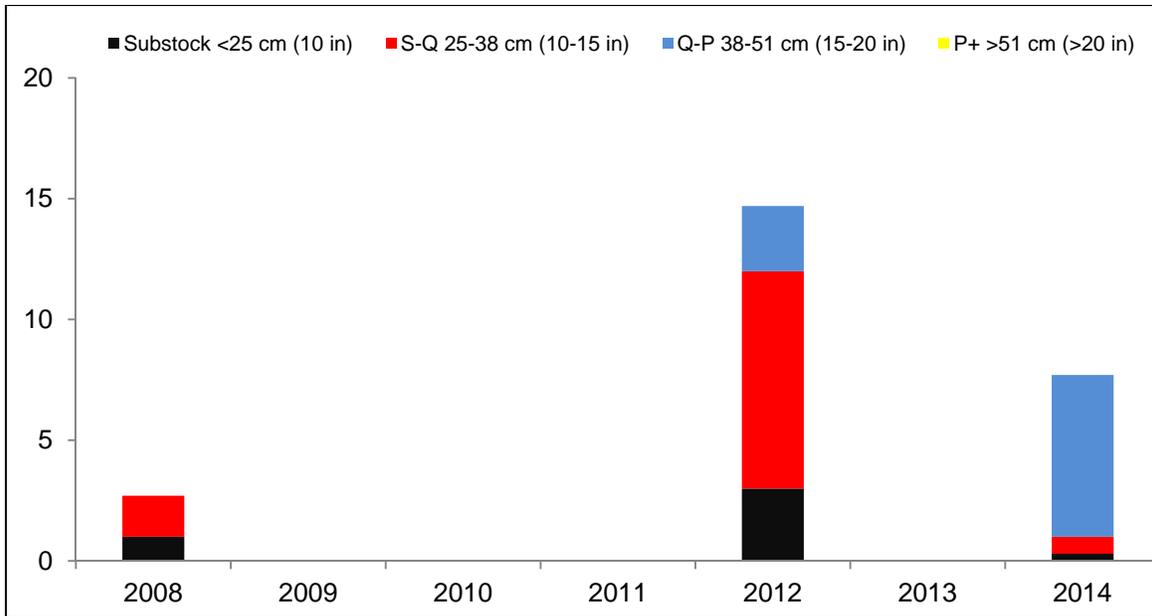


Figure 2. CPUE by length category for walleye sampled with gill nets in Lake Albert, Kingsbury County, 2008, 2012, 2014.

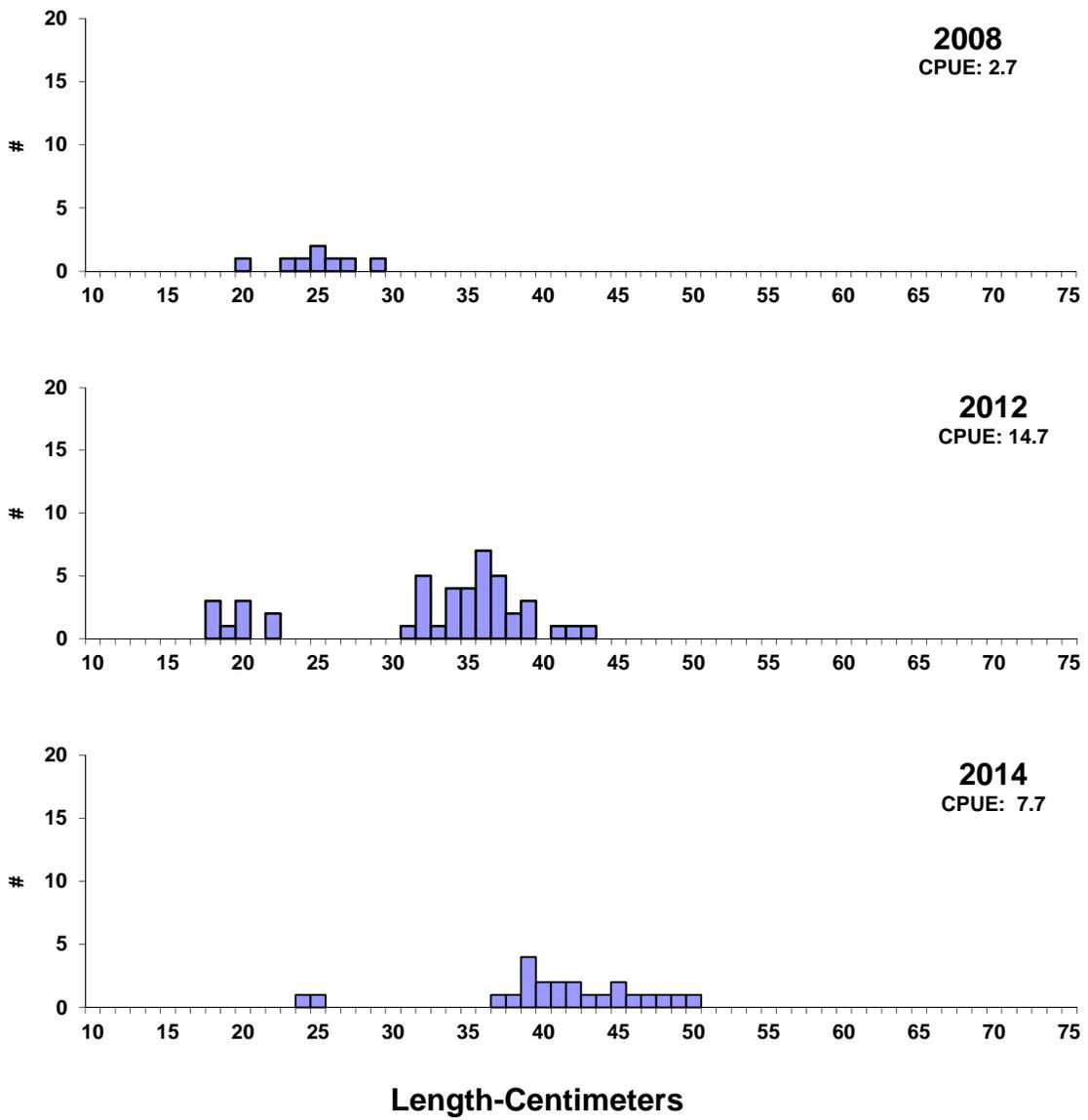


Figure 3. Length frequency histograms for walleyes sampled with gill nets in Lake Albert, Kingsbury County, 2008, 2012, 2014.

Yellow Perch

Yellow perch abundance has increased since 2012 (Table 11) and the majority of the fish sampled were 13-20 cm (5-8 in) long (Table 13, Figure 4). The lengths of fish in this large year class suggest they were produced in 2013. There has been no stocking since 2008 (Table 12) so these fish were naturally produced.

Table 11. CPUE, PSD, RSD-P, and mean Wr for all yellow perch sampled with gill nets in Lake Albert, Kingsbury County, 2005-2014. Columns for stocked years are shaded.

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
CPUE				0.0				13.7		24.7
PSD				--				71		18
RSD-P				--				34		15
Mean Wr				--				108		104

Table 12. Yellow perch stocked into Lake Albert, Kingsbury County, 2005-2014.

Year	Number	Size
2008	242,500	Fingerling

Table 13. CPUE by length category for yellow perch sampled with gill nets in Lake Albert, Kingsbury County, 2012, 2014.

Year	Substock <13 cm (5 in)	Stock 13 cm (5 in)	S-Q 13-20 cm (5-8 in)	Q-P 20-25 cm (8-10 in)	P+ >25 cm (10 in)	All Lengths	80% C.I.
2008	--	--	--	--	--	0.0	--
2012	0.0	13.7	4.0	5.0	4.7	13.7	+3.7
2014	2.7	22.0	18.0	0.7	3.3	24.7	+6.2

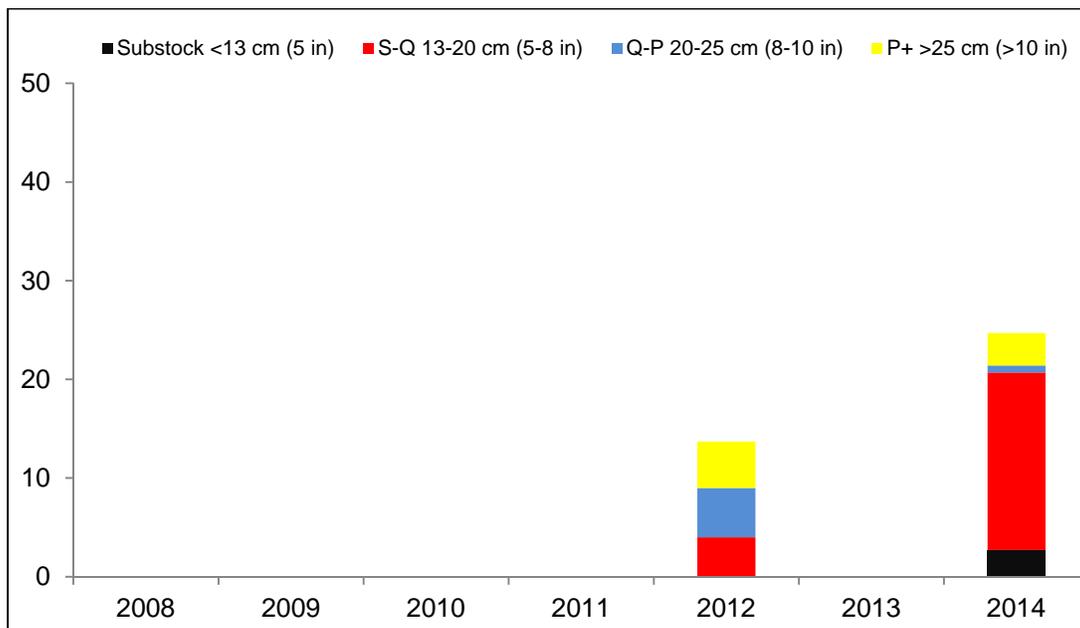


Figure 4. CPUE by length category for yellow perch sampled with gill nets in Lake Albert, Kingsbury County, 2008, 2012, 2014.

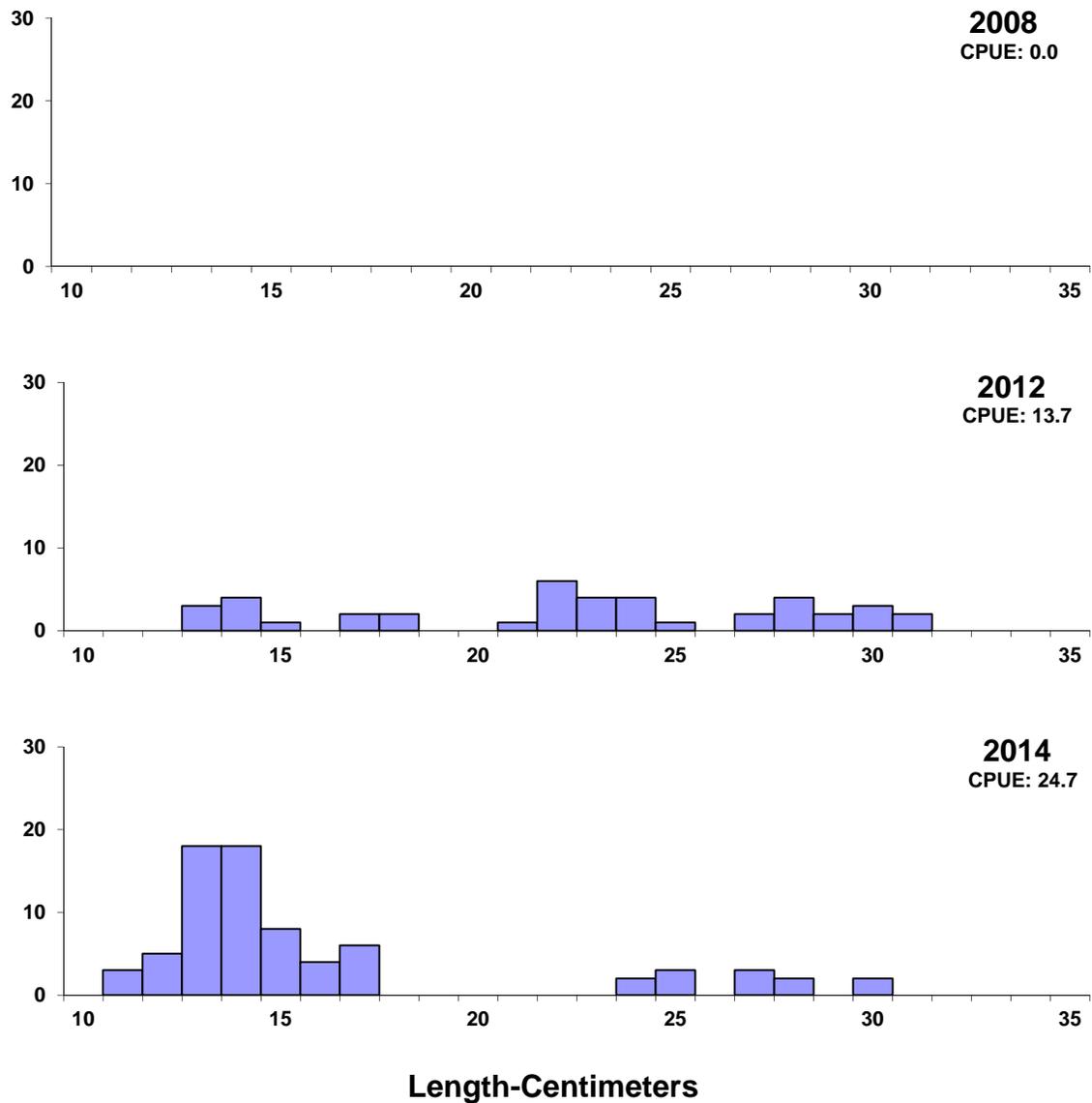
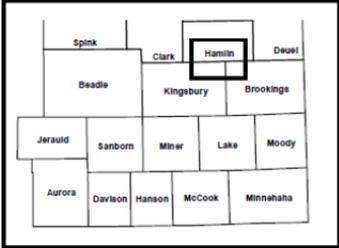


Figure 5. Length frequency histograms for yellow perch sampled with gill nets in Lake Albert, Kingsbury County, 2008, 2012, 2014.

Lake Albert – Kingsbury Co.
 Map Created: October 2002 Sonar Survey: June, 2001
 Lake Area: 3,699 acres Max Depth: 13 ft.
 Mean Depth: 8.8 ft.
 Shoreline Development Index: 2.1



South Dakota Game, Fish, and Parks
 SDSU Wildlife and Fisheries Sciences

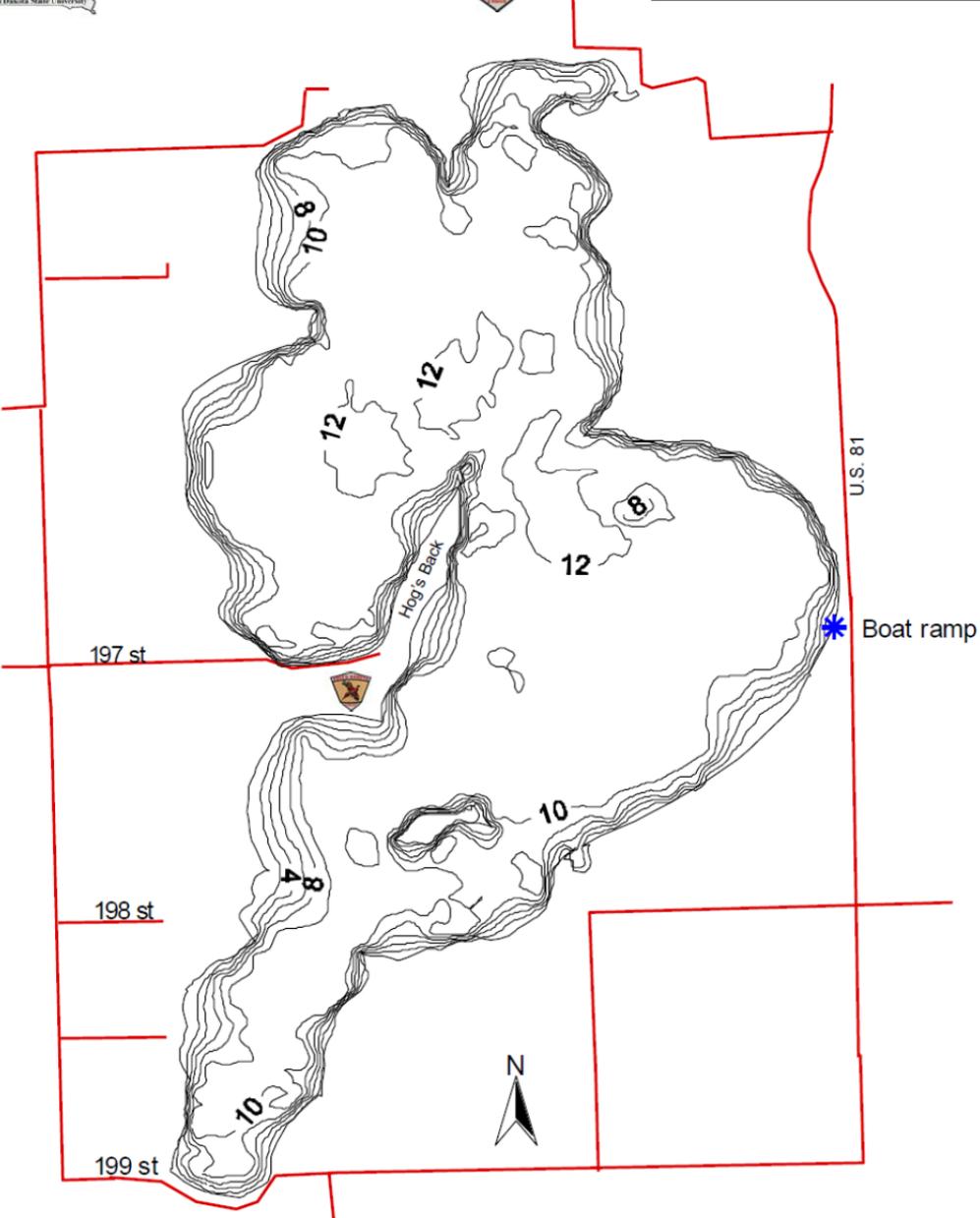


Figure 6. Contour map of Lake Albert, Kingsbury County.

Appendix A. A brief explanation of catch per unit effort (CPUE), proportional stock density (PSD), relative stock density (RSD) and relative weight (Wr).

Catch per Unit Effort (CPUE) is the catch of animals in numbers or in weight taken by a defined period of effort. Can refer to trap-net nights of effort, gill net nights of effort, catch per hour of electrofishing, etc.

Proportional Stock Density (PSD) is calculated by the following formula:

$$\text{PSD} = \frac{\text{Number of fish} > \text{quality length}}{\text{Number of fish} \geq \text{stock length}} \times 100$$

Relative Stock Density (RSD-P) is calculated by the following formula:

$$\text{RSD-P} = \frac{\text{Number of fish} > \text{preferred length}}{\text{Number of fish} \geq \text{stock length}} \times 100$$

PSD and RSD-P are unitless and usually calculated to the nearest whole digit.

Size categories for selected species found in Region 3 lake surveys, in centimeters (Inches in parenthesis).

Species	Stock	Quality	Preferred	Memorable	Trophy
Walleye	25 (10)	38 (15)	51 (20)	63 (25)	76 (30)
Yellow perch	13 (5)	20 (8)	25 (10)	30 (12)	38 (15)
Black crappie	13 (5)	20 (8)	25(10)	30 (12)	38 (15)
White crappie	13 (5)	20 (8)	25(10)	30 (12)	38 (15)
Bluegill	8 (3)	15 (6)	20 (8)	25 (10)	30 (12)
Largemouth bass	20 (8)	30 (12)	38 (15)	51 (20)	63 (25)
Smallmouth bass	18 (7)	28 (11)	35(14)	43 (17)	51 (20)
Northern pike	35 (14)	53 (21)	71 (28)	86 (34)	112 (44)
Channel catfish	28 (11)	41 (16)	61 (24)	71 (28)	91 (36)
Black bullhead	15 (6)	23 (9)	30 (12)	38 (15)	46 (18)
Common carp	28 (11)	41 (16)	53 (21)	66 (26)	84 (33)
Bigmouth buffalo	28 (11)	41 (16)	53 (21)	66 (26)	84 (33)

For most fish, 30-60 or 40-70 are typical objective ranges for “balanced” populations. Values less than the objective range indicate a population dominated by small fish while values greater than the objective range indicate a population comprised mainly of large fish.

Relative weight (Wr) is a condition index that quantifies fish condition (i.e., how much does a fish weigh for its length). A Wr range of 90-100 is a typical objective for most fish species. When mean Wr values are well below 100 for a size group, problems may exist in food and feeding relationships. When mean Wr values are well above 100 for a size group, fish may not be making the best use of available prey.