

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

2102-F-21-R-45

Name: Lake Preston **County:** Kingsbury
Legal Description: T110N- R54W-Sec. 3-4; T111N- R55W-Sec.25-28, 31-36
Location from nearest town: 1 mile north of Lake Preston, SD

Dates of present survey: August 15-16, 2012
Date last surveyed: June 25-26, 2002

Game Species	Other Species
Walleye	Bigmouth Buffalo
Yellow Perch	Common Carp
Black Crappie	White Sucker
Northern Pike	
Black Bullhead	

PHYSICAL DATA

Surface Area: 5,522 acres **Watershed area:** 58,687 acres
Maximum depth: 8 feet **Mean depth:** 4 feet
Contour map available: No **Date mapped:** NA
OHWM elevation: None set **Date set:** NA
Outlet elevation: None set **Date set:** NA
Lake elevation observed during the survey: 2 feet low
Beneficial use classifications: (6) warmwater marginal fish propagation, (7) immersion recreation, (8) limited-contact recreation and (9) fish and wildlife propagation and stock watering.

Ownership of Lake and Adjacent Lakeshore Property

Lake Preston is listed as meandered public water in the State of South Dakota Listing of Meandered Lakes. Except for public road right-of-ways, the entire shoreline is privately owned.

Fishing Access

Small boats can be launched off the county road grade that divides the east and west lake basins, but it is very difficult due to obstructions and loose sand and there is no off-road parking available. The only public shore fishing access is also off this road grade. Due to the limited boat and shore access, most fishing takes place during the winter.

Field Observations of Water Quality and Aquatic Vegetation

No water quality or aquatic vegetation observations were recorded in 2012.

BIOLOGICAL DATA

Methods:

Lake Preston was sampled on August 15-16, 2012 with three overnight gill net sets and five overnight trap net sets. The trap nets are constructed with 19-mm-bar-mesh ($\frac{3}{4}$ in) netting, 0.9 m high x 1.5 m wide (3 ft high x 5 ft wide) frames and 18.3 m (60 ft) long leads. The gill nets are 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:

Gill Net Catch

Yellow perch were the most common species sampled in the gill nets (Table 1). Small common carp were the most abundant of the remaining five species sampled.

Table 1. Total catch from three overnight gill net sets at Lake Preston, Kingsbury County August 15-16, 2012.

Species	Number	Percent	CPUE ¹	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Yellow Perch	309	65.7	103.0	± 13.5	49.4	64	18	98
Common Carp	89	18.9	29.7	± 11.5	24.9	23	2	84
Black Bullhead	42	8.9	14.0	± 4.6	44.4	54	46	89
Walleye	17	3.6	5.7	± 0.4	2.5	--	--	--
White Sucker	12	2.6	4.0	± 0.0	1.5	58	0	86
Black Crappie	1	0.2	0.3	± 0.4	0.0	--	--	--

* 2 years (2000, 2002)

Table 2. Catch per unit effort by length category for various fish species captured with gill nets in Lake Preston August 15-16, 2012.

Species	Substock	Stock	S-Q	Q-P	P+	All sizes	80% C.I.
Yellow Perch	--	103.0	37.0	47.7	18.3	103.0	± 13.5
Common Carp	12.0	17.7	13.7	3.7	0.3	29.7	± 11.5
Black Bullhead	0.3	13.7	6.4	7.3	--	14.0	± 4.6
Walleye	4.7	1.0	0.3	0.7	--	5.7	± 0.4
White Sucker	--	4.0	1.7	2.3	--	4.0	± 0.0
Black Crappie	--	0.3	0.3	--	--	0.3	± 0.4

* Length categories can be found in Appendix A.

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

Trap Net Catch

Black bullhead, white sucker and common carp comprised 71.6% of the trap-net sample (Table 3). Yellow perch comprised an additional 22% of the sample and walleye, black crappie, northern pike and bigmouth buffalo made up the remainder.

Table 3. Total catch from five overnight trap net sets at Lake Preston, Kingsbury County, August 15-16, 2012.

Species	Number	Percent	CPUE	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Black Bullhead	266	41.4	53.2	<u>+38.3</u>	133.9	29	2	86
Yellow Perch	141	22.0	28.2	<u>+16.6</u>	9.5	85	34	103
White Sucker	125	19.5	25.0	<u>+21.9</u>	2.2	79	6	90
Common Carp	69	10.7	13.8	<u>+8.0</u>	5.6	83	50	91
Walleye	19	3.0	3.8	<u>+1.1</u>	0.8	--	--	--
Black Crappie	13	2.0	2.6	<u>+1.5</u>	1.0	8	0	115
Northern Pike	8	1.2	1.6	<u>+0.7</u>	30.6	--	--	--
Bigmouth Buffalo	1	0.2	0.2	<u>+0.3</u>	0.1	--	--	--

* 3 years (1996, 2000, 2002)

Table 4. Catch per unit effort by length category for various fish species captured with trap nets in Lake Preston August 15-16, 2012.

Species	Substock	Stock	S-Q	Q-P	P+	All sizes	80% C.I.
Black Bullhead	3.0	50.2	35.8	13.2	1.2	53.2	<u>+38.3</u>
Yellow Perch	--	28.2	4.2	14.4	9.6	28.2	<u>+16.6</u>
White Sucker	--	25.0	5.2	18.2	1.6	25.0	<u>+21.9</u>
Common Carp	3.0	10.8	1.8	3.6	5.4	13.8	<u>+8.0</u>
Walleye	2.6	1.2	0.2	1.0	--	3.8	<u>+1.1</u>
Black Crappie	--	2.6	2.4	0.2	--	2.6	<u>+1.5</u>
Northern Pike	--	1.6	0.6	0.4	0.6	1.6	<u>+0.7</u>
Bigmouth Buffalo	--	0.2	--	0.2	--	0.2	<u>+0.3</u>

* Length categories can be found in Appendix A.

Walleye

Management objectives:

- 1) To maintain a walleye population with a gill-net CPUE of at least 25 whenever the lake is deep enough to minimize the risk of fish kills.
- 2) To rear juvenile and adult walleyes for stocking in other South Dakota waters as needed.

Despite the stocking of 5.6 million walleye fry since 2010 (Table 10), walleye CPUE remains far below the management objective (Table 5). The drought of 2012 has significantly lowered the water level in the lake and unless it refills in spring 2013, it is unlikely other walleye stocking will be attempted.

Table 5. Walleye gill-net CPUE, PSD, RSD-P and mean Wr for Lake Preston, Kingsbury County, 2000-2012.

	2000	2002	2009	2010	2011	2012
CPUE	4.7	0.3				5.7
PSD	79	--				--
RSD-P	0	--				--
Mean Wr	113	--				--

Yellow Perch

Management objectives:

- 1) To maintain a yellow perch population with a gill-net CPUE of at least 50 whenever the lake is deep enough to minimize the risk of fish kills.
- 2) To rear juvenile and adult yellow perch for stocking in other South Dakota waters as needed.
- 3) To provide a source of yellow perch eggs for state fish hatchery production.

Yellow perch abundance was well above the management objective (Tables 2, 6) and the sampled fish ranged in length from 16-28 cm (6-11 in) (Figure 1). The stocking of 56,250 age-1 fingerlings in April 2010 plus 131,420 age-0 fingerlings produced at Blue Dog State Fish Hatchery in June 2010 may have contributed to the increase in abundance. However, because the stocked fish were not marked and no aging structures were collected from the sampled fish, this cannot be confirmed. If Lake Preston does not winterkill in 2012-2013, we will likely attempt to transfer yellow perch to other waters in 2013 if the water level does not increase.

Table 6. Yellow perch gill-net CPUE, PSD, RSD-P and mean Wr for Lake Preston, Kingsbury County, 2000-2012.

	2000	2002	2009	2010	2011	2012
CPUE	67.7	31.0				103.0
PSD	54	44				64
RSD-P	36	20				18
Mean Wr	97	113				98

Other Species

The black crappie sampled this year likely emigrated from Whitewood Lake during spring water flows (Table 9). Rough fish populations are fairly low and do not present any management issues at this time.

Table 7. Gill-net (GN) and trap-net (TN) CPUE for all fish species sampled in Lake Preston, Kingsbury County.

Species	1996	2000	2002	2012
COC (GN)	*	11.0	38.7	29.7
COC (TN)	7.9	2.0	7.0	13.8
WHS (GN)	*	1.7	1.3	4.0
WHS (TN)	0.1	3.0	3.6	25.0
SHR (GN)	*	--	--	--
SHR (TN)	--	0.2	--	--
BIB (GN)	*	--	--	--
BIB (TN)	0.1	--	0.2	0.2
BLB (GN)	*	79.7	9.0	14.0
BLB (TN)	12.1	195.6	194.0	53.2
NOP (GN)	*	6.3	38.0	--
NOP (TN)	12.9	12.6	66.2	1.6
BLC (GN)	*	--	--	0.3
BLC (TN)	--	3.0	--	2.6
YEP (GN)	*	67.7	31.0	103.0
YEP (TN)	3.4	20.4	4.8	28.2
WAE (GN)	*	4.7	0.3	5.7
WAE (TN)	0.1	0.8	1.4	3.8

COC (Common Carp), WHS (White Sucker), SHR (Shorthead Redhorse), BIB (Bigmouth Buffalo), BLB (Black Bullhead), NOP (Northern Pike), BLC (Black Crappie), YEP (Yellow Perch), WAE (Walleye).

MANAGEMENT RECOMMENDATIONS

1. Lake Preston is a shallow, marginal lake subject to frequent winterkills. Management efforts will involve stocking yellow perch and walleye as needed to maintain populations, monitoring fish populations to provide information for anglers and using the lake as a source of eggs for hatchery production or fish for restocking in other waters.

Table 8. Stocking record for Lake Preston, Kingsbury County, 1997-2012.

Year	Number	Species	Size
1997	5,052	Yellow Perch	Adult
1998	4,100,000	Walleye	Fry
2001	24,178	Yellow Perch	Adult
2010	2,800,000	Walleye	Fry
	187,390	Yellow Perch	Fingerling
2012	2,800,000	Walleye	Fry

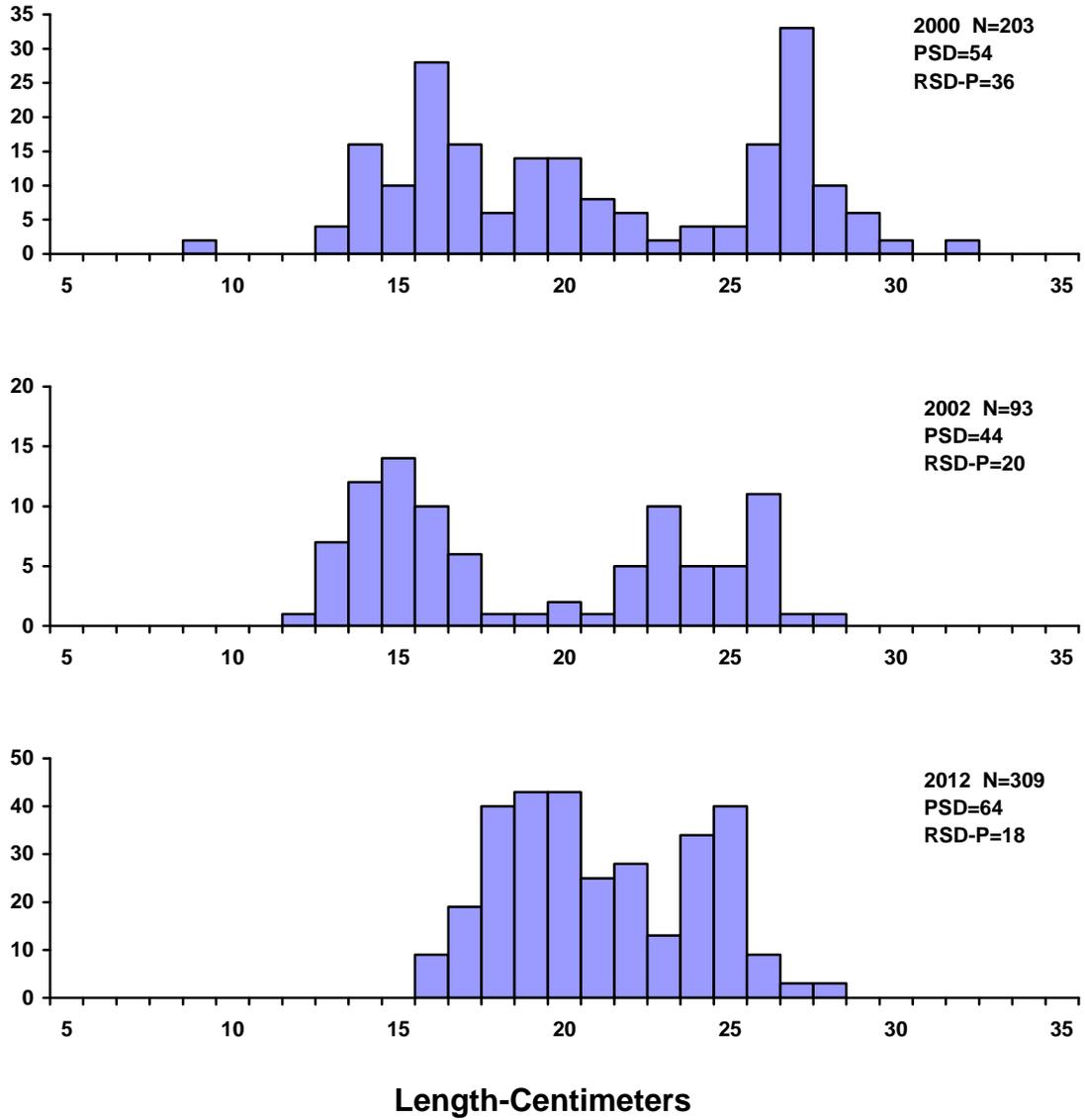


Figure 1. Length frequency histograms for yellow perch sampled with gill nets in Lake Preston, Kingsbury County, 2000, 2002, and 2012.

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.