

# SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

2102-F-21-R-45

**Name:** Lake Thompson

**Counties:** Kingsbury and Miner

**Legal Description:** T110N-R55W-Sec.20-22, 28-33; T109N-R55W-Sec.4-9, 16-17; T110N-R56W-Sec.36; T109N-R56W-Sec.1

**Location from nearest town:** 6 miles south and 4 miles east of DeSmet, SD.

**Dates of present survey:** August 6-8, 2012 (netting); Sept. x, 2012 (electrofishing)

**Dates of last survey:** August 1-3, 2011 (netting); Sept. 7, 2011 (electrofishing)

Game Species	Other Species
Walleye	Common Carp
Yellow Perch	White Sucker
Black Crappie	
Northern Pike	
Smallmouth Bass	
Black Bullhead	

## PHYSICAL DATA

**Surface area:** 16,236 acres

**Maximum depth:** 26 feet

**Volume:** 148,692 acre-feet

**Contour map available:** Yes

**OHWB elevation:** None set

**Outlet elevation:** None set

**Lake elevation observed during the survey:** Full

**Beneficial use classifications:** (4) Warmwater permanent fish propagation, (7) immersion recreation, (8) limited-contact recreation and (9) fish and wildlife propagation and stock watering.

**Watershed area:** 263,044 acres

**Mean depth:** 14.5 feet

**Shoreline length:** 44.6 miles

**Date mapped:** 2002

**Date set:** NA

**Date set:** NA

## Introduction

Lake Thompson, located in central Kingsbury County, was named for John Thompson, a pioneer farmer and Civil War veteran. Lake Thompson had been nothing but a shallow marsh until heavy precipitation in the early 1980s caused the lake to grow to over 16,000 acres and almost 30 feet in depth. It is now one of the more important fisheries in eastern South Dakota.

## **Ownership of Lake and Adjacent Lakeshore Properties**

The State of South Dakota Listing of Meandered Lakes lists 8,000 acres of the original lakebed as meandered. The balance of lake ownership is divided between private landowners, the South Dakota Department of Game, Fish, and Parks (GFP), and the United States Fish and Wildlife Service. The GFP Wildlife Division manages the fishery and Game Production Areas while the Parks Division manages the Recreation and Lake Access Areas.

## **Fishing Access**

The Northeast Access Area, located on the northeast corner of the lake, has a double lane boat ramp, boat dock, parking lot, public toilet and shore fishing access. The Lake Thompson Recreation Area, also located on the northeast shore of the lake, has a double lane boat ramp, boat dock, public toilet, parking lot, campgrounds, swim beach, and shore fishing access. The North Access Area, located on the northwestern shore of the lake, has a boat ramp, boat dock, public toilet and shore fishing access. The West Access Area, located on the west shore of the lake, has a double lane boat ramp, boat dock, public toilet, parking lot, and shore fishing access.

## **Field Observations of Water Quality and Aquatic Vegetation**

The Secchi depth measurement taken during the survey was 89 cm (35 in) and a significant algae bloom was in progress. No aquatic vegetation observations were recorded.

# **BIOLOGICAL DATA**

## **Methods:**

Lake Thompson was sampled on August 6-8, 2012 with three overnight gill-net sets and 10 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. Two hours of nighttime electrofishing was done on September 10, 2012 to evaluate walleye recruitment. Sampling sites are displayed in Figure 5.

## Gill Net Catch

Walleye and yellow perch were the most abundant species sampled in 2012 (Table 1). An additional five species were also sampled.

**Table 1.** Total catch from three overnight gill net sets at Lake Thompson, Kingsbury County, August 6-8, 2012.

Species	No.	%	CPUE <sup>1</sup>	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Walleye	115	52.3	38.3	±9.3	26.5	15	0	84
Yellow Perch	50	22.7	16.7	±11.1	14.0	80	20	113
White Bass	28	12.7	9.3	±2.3	0.5	100	100	97
Black Crappie	14	6.4	4.7	±2.8	3.1	64	7	119
Northern Pike	10	4.5	3.3	±1.7	0.9	50	0	85
Common Carp	2	0.9	0.7	±0.9	4.3	--	--	--
Spottail Shiner	1	0.5	0.3	±0.4	0.9	--	--	--

\* 10 years (2002-2011)

**Table 2.** Catch per unit effort by length category for various fish species captured with gill nets in Lake Thompson August 6-8, 2012.

Species	Substock	Stock	S-Q	Q-P	P+	All sizes	80% C.I.
Walleye	11.6	26.7	22.7	4.0	--	38.3	±9.3
Yellow Perch	--	16.7	3.3	10.0	3.4	16.7	±11.1
White Bass	3.6	5.7	--	--	5.7	9.3	±2.3
Black Crappie	--	4.7	1.7	2.7	0.3	4.7	±2.8
Northern Pike	--	3.3	1.7	1.6	--	3.3	±1.7
Common Carp	--	0.7	--	0.4	0.3	0.7	±0.9
Spottail Shiner	--	--	--	--	--	0.3	±0.4

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

<sup>1</sup> See Appendix A for definitions of CPUE, PSD, and mean Wr.

## Trap Net Catch

Black bullhead, black crappie, common carp and northern pike comprised 85.3% of the trap net sample in 2012 (Table 3). An additional six species were also caught.

**Table 3.** Total catch from twelve overnight trap net sets at Lake Thompson, Kingsbury County, August 6-8, 2012.

Species	No.	%	CPUE	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
<b>Black Bullhead</b>	300	31.9	30.0	±18.3	42.4	5	0	96
<b>Black Crappie</b>	204	21.7	20.4	±9.3	7.5	98	32	115
<b>Common Carp</b>	159	16.9	15.9	±6.2	6.5	96	23	101
<b>Northern Pike</b>	139	14.8	13.9	±5.1	2.4	35	3	72
<b>Walleye</b>	70	7.5	7.0	±2.6	8.3	41	14	81
<b>Bigmouth Buffalo</b>	35	3.7	3.5	±1.4	0.4	94	17	91
<b>White Bass</b>	24	2.6	2.4	±1.4	0.1	100	90	97
<b>Smallmouth Bass</b>	3	0.3	0.3	±0.2	0.8	--	--	--
<b>Bluegill</b>	3	0.3	0.3	±0.2	0.0	--	--	--
<b>Yellow Perch</b>	2	0.2	0.2	±0.2	0.2	--	--	--

\* 10 years (2002-2011)

**Table 4.** Catch per unit effort by length category for various fish species captured with trap nets in Lake Thompson August 6-8, 2012.

Species	Substock	Stock	S-Q	Q-P	P+	All sizes	80% C.I.
<b>Black Bullhead</b>	0.3	29.7	28.3	1.4	--	30.0	±18.3
<b>Black Crappie</b>	--	20.4	0.4	13.5	6.5	20.4	±9.3
<b>Common Carp</b>	--	15.9	0.7	11.5	3.7	15.9	±6.2
<b>Northern Pike</b>	0.3	13.6	8.8	4.4	0.4	13.9	±5.1
<b>Walleye</b>	2.1	4.9	2.9	1.3	0.7	7.0	±2.6
<b>Bigmouth Buffalo</b>	--	3.5	0.2	2.7	0.6	3.5	±1.4
<b>White Bass</b>	0.4	2.0	--	0.2	1.8	2.4	±1.4
<b>Smallmouth Bass</b>	--	0.3	--	0.3	--	0.3	±0.2
<b>Bluegill</b>	--	0.3	0.3	--	--	0.3	±0.2
<b>Yellow Perch</b>	--	0.2	0.1	--	0.1	0.2	±0.2

Length categories can be found in Appendix A.

## Walleye

**Management objective:** Maintain a walleye population with a gill-net CPUE of at least 20.

While gill-net CPUE exceeded the management objective in 2012 (Table 5), it should be noted that 30% of the fish sampled were substock length (Table 2). Age-1 and age-2 fish comprised the majority of the sample (Table 6). Gill-net CPUE of walleyes from the 2010 year class (age-2+) was high again this year suggesting that 2010 fall electrofishing substantially underestimated the size of that year class. The crew conducting that survey reported difficulty electrofishing around submerged trees flooded by the rising water which they felt negatively impacted their ability to catch fish. The catch of age-1+ walleyes was also high as expected due to the good year class created by stocking in 2011 (Table 7).

Walleye growth remains good (Table 6) and condition (mean  $W_r$ ) has varied little over the past 10 years (Table 5). We did not sample as many larger fish in 2012 (Table 5, Figure 1).

**Table 5.** Walleye gill-net CPUE, PSD, RSD-P and mean  $W_r$  for all walleye sampled in Lake Thompson, Kingsbury County, 2003-2012.

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Mean*
CPUE	22.8	16.0	34.0	26.0	26.5	12.8	21.8	45.0	28.4	38.3	26.5
PSD	27	24	38	22	33	27	1	13	41	15	28
RSD-P	8	4	3	1	2	3	0	1	1	0	3
Mean $W_r$	83	89	91	88	90	88	87	89	88	84	89

\*10 years (2002-2011)

**Table 6.** Weighted mean length at capture (mm) for walleye captured in gill nets in Lake Thompson, Kingsbury County, 2003-2011. Note: sampling was conducted at approximately the same time during each year allowing comparisons among years to monitor growth trends. Sample size in parentheses.

Year	1	2	3	4	5	6	7	8	9	10	11	12
2012 (115)	212 (35)	331 (64)	418 (9)	408 (3)	415 (4)	--	--	--	--	--	--	--
2011 (142)	253 (55)	328 (7)	400 (11)	385 (67)	402 (1)	--	--	--	514 (1)	--	--	--
2010 (114)	250 (11)	319 (18)	351 (83)	450 (1)	530 (1)	--	--	--	--	--	--	--
2009 (109)	213 (4)	278 (95)	360 (10)	--	--	--	--	--	--	--	--	--
2008 (64)	212 (30)	343 (24)	--	441 (7)	--	--	493 (2)	--	495 (1)	--	--	--
2007 (91)	282 (48)	331 (8)	410 (28)	438 (4)	--	409 (1)	--	654 (1)	630 (1)	--	--	--
2006 (100)	290 (4)	343 (83)	403 (4)	--	466 (3)	464 (6)	--	--	--	--	--	--
2005 (133)	260 (73)	350 (6)	370 (15)	419 (24)	409 (10)	433 (1)	427 (1)	626 (2)	617 (1)	--	--	--
2004 (88)	262 (5)	321 (17)	347 (38)	375 (19)	472 (5)	508 (1)	532 (1)	607 (1)	--	681 (1)	--	--
2003 (138)	245 (10)	312 (86)	372 (9)	453 (10)	497 (15)	508 (6)	600 (1)	599 (1)	--	--	--	--

Natural reproduction for walleye was poor in 2012 (Table 7). Surprisingly, sampled fish were small and in poor condition. The abundance of age-1 walleyes was high indicating good survival of fish from the large 2011 year class. However, similar to the age-0 fish, age-1 walleyes were small and in poorer than average condition.

**Table 7.** Age-0 and age-1 walleyes sampled during 2 hours of nighttime electrofishing on Lake Thompson, Kingsbury County, 1999-2012.

Year	Stocking	Age-0 CPH	80% C.I.	% stocked	Mean length (range; mm)	Wr	Age-1 CPH	80% C.I.	Mean length (range; mm)	Wr
2012	none	4	1-7		132 (119-142)	81	69	40-98	224 (186-277)	77
2011	fry	187	49-324	51	140 (109-198)	90	7	0-18	274 (247-300)	83
2010	none	27	6-48		175 (135-199)	90	8	2-14	<sup>2</sup> (263-328)	
2009	none	8	0-22		150 (147-154)	113	3		231 (229-233)	83
2008	none	13	7-18		149 (137-161)	103	110	73-147	236 (182-277)	83
2007	none	214	134-294		148 (111-195)	87	2	0-4	332 (324-347)	84
2006	fry <sup>1</sup>	43	29-57	4	203 (167-236)	91	2	0-2	324 (317-328)	85
2005	none	5	2-8		197 (181-200)	104	50	34-67	289 (250-323)	88
2004	fry	290	132-447	74	131 (110-170)	93	2	1-3	283 (270-290)	85
2003	none	16	6-26		169 (158-181)	94	4	2-6	255 (232-271)	83
2002	none	78	42-114		154 (127-186)	104	13	4-21	260 (218-188)	87
2001	none	202	136-268		169 (129-216)	105	10	6-13	257 (245-269)	89
2000	none	231	117-345		153 (120-192)	93	52	38-66	238 (203-290)	83
1999	none	155	99-211							

<sup>1</sup> Stocked with 17,935 large fingerlings (5.0/lb) after electrofishing was completed.

<sup>2</sup> Only the smallest and largest age-1 individuals were measured to provide a range of lengths.

## Yellow Perch

Yellow perch abundance continues to decline but is still above the 10-year mean (Table 8). The majority of fish sampled ranged in length from 20-28 cm (8-11 in) (Figure 1) and growth remains excellent (Table 9). The yellow perch management objective was removed because no reasonable management strategies to increase yellow perch abundance could be identified.

**Table 8.** Yellow perch gill-net CPUE, PSD, RSD-P and mean Wr in Lake Thompson, Kingsbury County, 2003-2012.

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Mean*
CPUE	6.5	16.3	7.3	3.3	4.0	2.8	3.8	12.0	29.0	16.7	14.0
PSD	87	89	76	100	100	57	95	69	62	80	76
RSD-P	3	36	59	54	50	50	11	50	28	20	35
Mean Wr	110	112	107	112	122	117	119	112	111	113	114

\* 10 years (2002-2011)

**Table 9.** Weighted mean length at capture (mm) for yellow perch captured in gill nets in Lake Thompson, Kingsbury County, 2003-2012. Note: sampling was conducted at approximately the same time during each year allowing comparisons among years to monitor growth trends. Sample size in parentheses.

Year	1	2	3	4	5	6	7	8	9	10
2012 (54)	184 (10)	262 (34)	285 (8)	254 (1)	282 (1)	--	--	--	--	--
2011 (145)	175 (54)	230 (46)	260 (2)	268 (31)	--	--	272 (10)	--	--	332 (2)
2010 (36)	168 (11)	--	250 (21)	266 (3)	310 (1)	--	--	--	--	--
2009 (19)	--	224 (18)	--	280 (1)	--	--	--	--	--	--
2008 (14)	156 (6)	--	241 (1)	276 (4)	303 (1)	--	308 (2)	--	--	--
2007 (12)	--	--	246 (5)	248 (3)	--	280 (4)	--	--	--	--
2006 (13)	--	224 (5)	--	--	272 (8)	--	--	--	--	--
2005 (29)	167 (6)	213 (3)	243 (1)	268 (18)	259 (1)	--	--	--	--	--
2004 (100)	153 (11)	--	243 (80)	263 (5)	288 (2)	261 (2)	--	--	--	--
2003 (39)	--	216 (35)	243 (4)	--	--	--	--	--	--	--

## **Black Crappie**

Black crappie CPUE has declined but remains above the 10-year mean (Table 10). The size structure of the population has increased and the majority of fish sampled were 21-27 cm (8-10.5 in) (Figure 3). PSD and RSD-P increased which also indicates an overall increase in the size of fish in the population.

**Table 10.** Black crappie trap-net CPUE, PSD, RSD-P and mean Wr in Lake Thompson, Kingsbury County, 2003-2012.

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Mean*
CPUE	1.3	1.4	2.5	0.8	1.1	1.8	0.1	1.8	50.8	20.4	7.5
PSD	100	97	100	--	100	100	--	100	16	98	79
RSD-P	22	19	100	--	92	65	--	95	3	32	52
Mean Wr	114	92	107	--	106	103	--	93	126	115	108

\* 10 years (2002-2011)

## **Northern Pike**

Northern pike abundance continued to increase in 2012 (Table 11). Declining PSD and RSD-P indicates a population comprised of smaller fish. Figure 4 also illustrates a population with more small fish. However, the population still contains some very large fish as well.

**Table 11.** Northern pike trap-net CPUE, PSD, RSD-P and mean Wr in Lake Thompson, Kingsbury County, 2003-2012.

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Mean*
CPUE	5.1	0.9	4.7	0.8	0.5	1.3	1.1	1.4	4.4	13.9	2.4
PSD	28	--	96	--	--	93	85	67	64	35	74
RSD-P	19	--	38	--	--	64	46	33	13	3	34
Mean Wr	72	--	80	--	--	76	75	83	87	72	80

\* 10 years (2002-2011)

## Other Species

Rough fish populations remain low and are not a management concern at this time (Table 12). White bass abundance is increasing and a fishery started to develop in 2012.

**Table 12.** Gill-net (GN) and trap-net (TN) CPUE for all fish species sampled in Lake Thompson, Kingsbury County, 2003-2012.

<b>Species</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
<b>SPS (GN)</b>	--	3.0	--	0.8	0.5	--	3.2	--	0.4	0.3
<b>SPS (TN)</b>	--	--	--	--	--	--	--	--	--	--
<b>COC (GN)</b>	0.7	0.7	4.0	10.5	7.3	3.8	3.2	1.3	6.0	0.7
<b>COC (TN)</b>	5.1	5.8	3.7	4.2	13.7	7.5	0.7	9.5	10.5	15.9
<b>WHS (GN)</b>	0.2	--	0.8	0.3	--	--	--	0.3	--	--
<b>WHS (TN)</b>	--	0.3	0.5	--	--	0.3	0.2	--	--	--
<b>BIB (GN)</b>	--	--	--	--	0.3	2.0	0.2	--	--	--
<b>BIB (TN)</b>	--	--	--	--	0.2	0.4	1.8	1.7	0.2	3.5
<b>BLB (GN)</b>	154.5	10.8	--	--	--	--	--	--	0.2	--
<b>BLB (TN)</b>	122.1	4.0	2.3	0.7	0.1	--	--	0.1	2.6	30.0
<b>NOP (GN)</b>	0.8	0.8	0.3	1.5	--	0.2	0.4	0.7	2.8	3.3
<b>NOP (TN)</b>	5.1	0.9	4.7	0.8	0.5	1.3	1.1	1.4	4.4	13.9
<b>WHB (GN)</b>	--	--	--	0.3	--	--	3.2	1.0	0.8	9.3
<b>WHB (TN)</b>	--	--	--	--	--	--	--	--	0.8	2.4
<b>BLG (GN)</b>	--	--	--	--	--	--	--	--	--	--
<b>BLG (TN)</b>	--	--	--	--	--	--	--	0.1	0.2	0.3
<b>SMB (GN)</b>	0.3	0.2	0.8	0.3	0.3	--	--	--	--	--
<b>SMB (TN)</b>	2.0	0.3	0.2	0.4	0.4	0.3	0.8	0.4	1.0	0.3
<b>BLC (GN)</b>	0.3	0.8	0.5	1.0	0.3	--	0.2	0.7	22.8	4.7
<b>BLC (TN)</b>	1.3	1.4	2.5	0.8	1.1	1.8	0.1	1.8	50.8	20.4
<b>YEP (GN)</b>	6.5	16.3	7.3	3.3	4.0	2.8	3.8	12.0	29.0	16.7
<b>YEP (TN)</b>	0.3	--	--	--	--	0.1	--	--	0.8	0.2
<b>WAE (GN)</b>	22.8	16.0	34.0	26.0	26.5	12.8	21.8	45.0	28.4	38.3
<b>WAE (TN)</b>	6.9	1.6	26.5	1.2	3.5	14.1	9.0	9.9	3.1	7.0

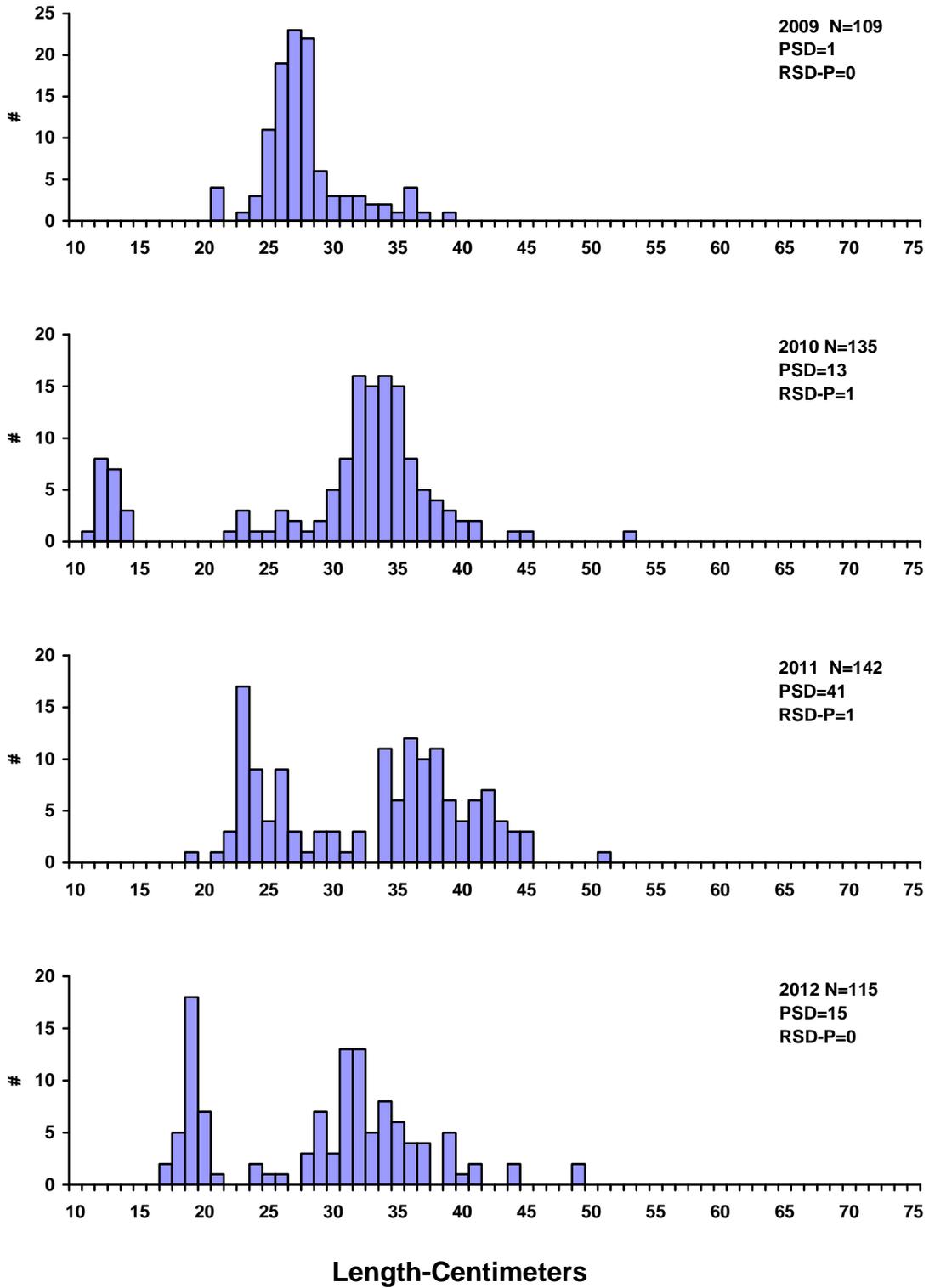
SPS (Spottail Shiner), COC (Common Carp), WHS (White Sucker), BIB (Bigmouth Buffalo), BLB (Black Bullhead), NOP (Northern Pike), WHB (White Bass), BLG (Bluegill), SMB (Smallmouth Bass), BLC (Black Crappie), YEP (Yellow Perch), WAE (Walleye)

## MANAGEMENT RECOMMENDATIONS

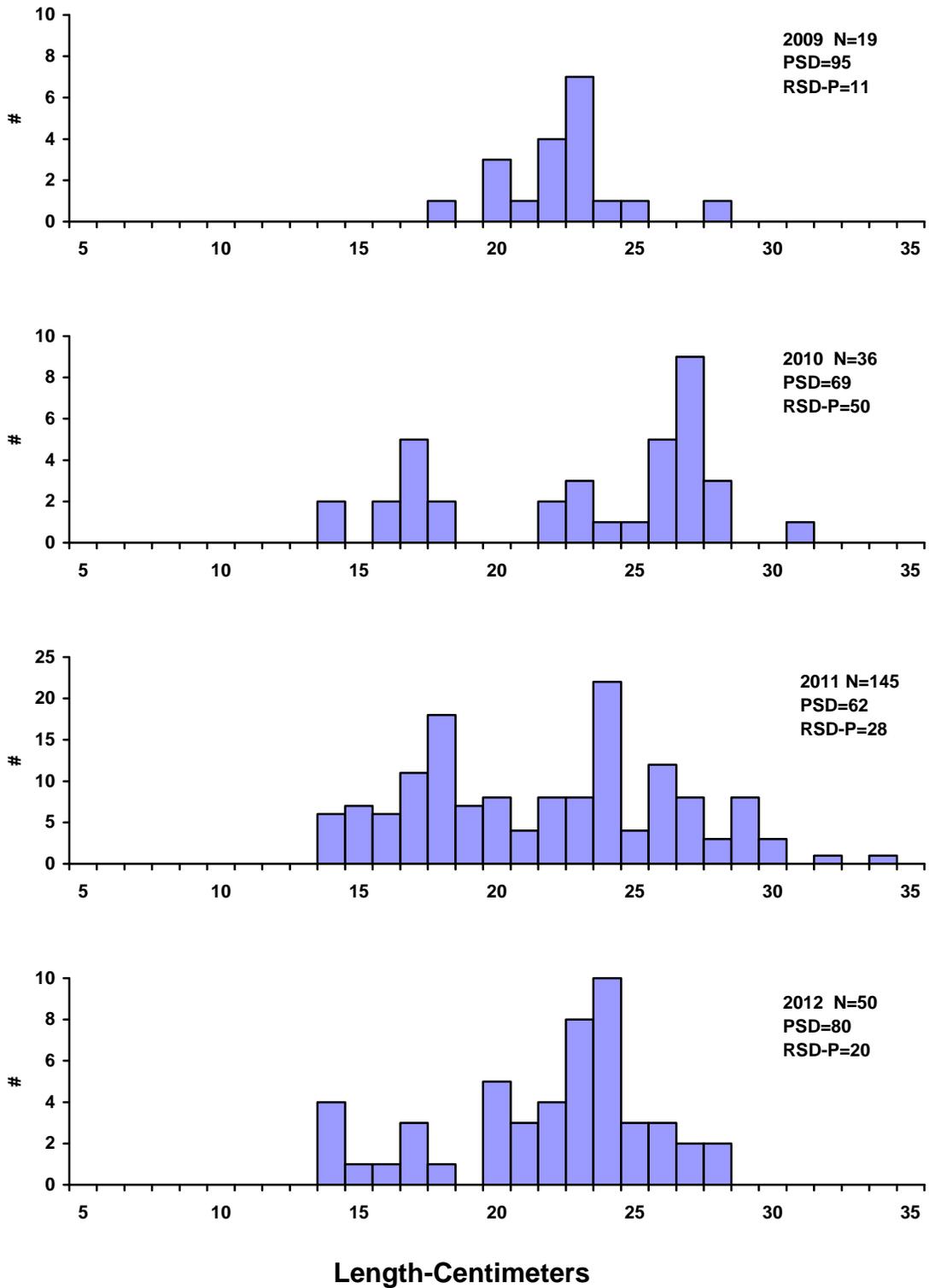
1. Continue to monitor general fish populations in Lake Thompson with annual netting surveys and conduct fall electrofishing surveys to monitor walleye recruitment.
2. Stock walleye fry when fall electrofishing indicates failed natural reproduction.

**Table 13.** Stocking record for Lake Thompson, Kingsbury County, 1991-2012.

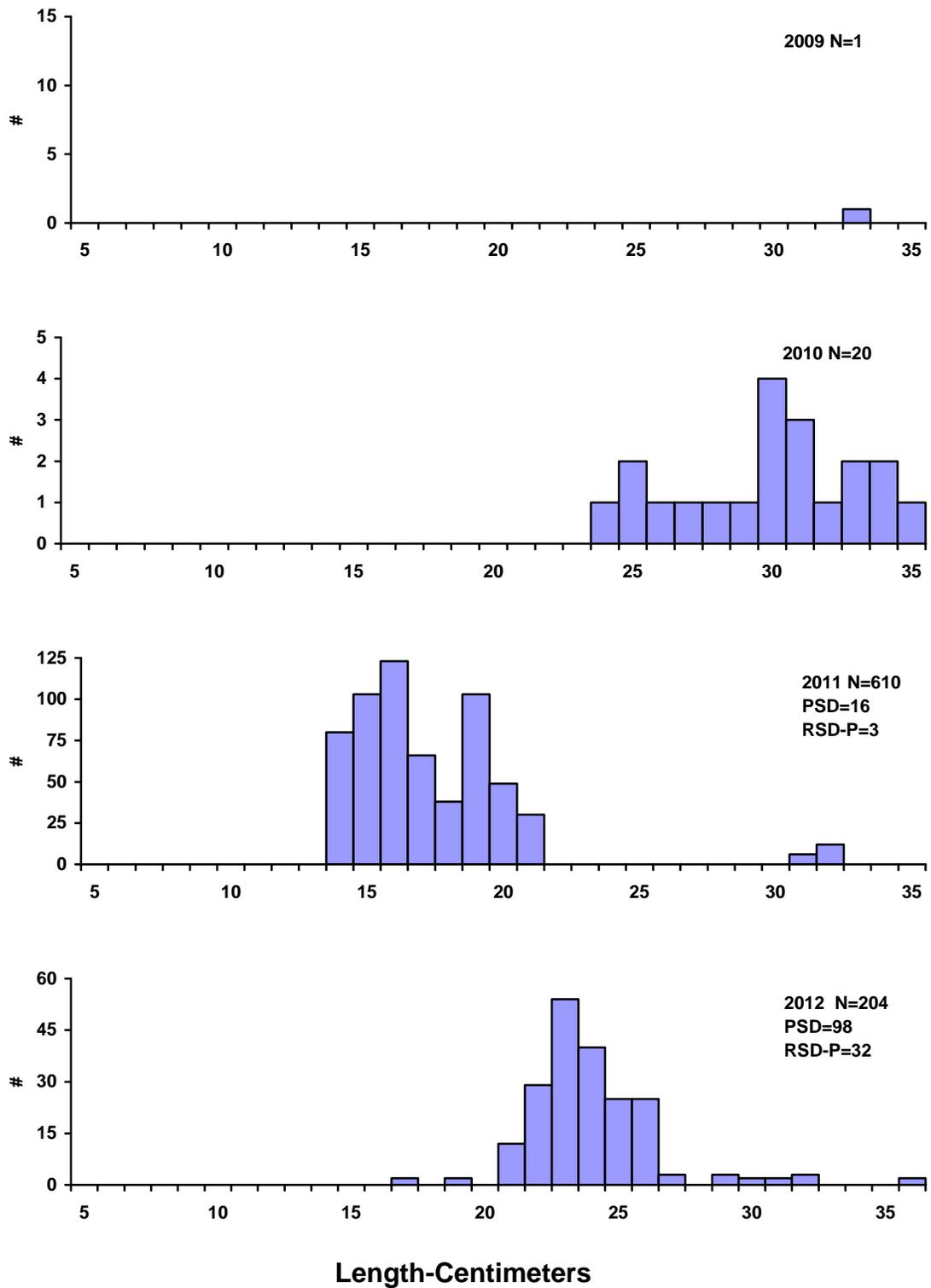
<b>Year</b>	<b>Number</b>	<b>Species</b>	<b>Size</b>
1991	283	Walleye	Adult
	52,038	Largemouth Bass	Sml. Fingerling
	10,850	Largemouth Bass	Med. Fingerling
	30,000	Smallmouth Bass	Fingerling
	160	Gizzard Shad	Adult
1995	60,000	Largemouth Bass	Fingerling
	100,000	Smallmouth Bass	Fingerling
1996	99,270	Largemouth Bass	Fingerling
	151,870	Smallmouth Bass	Fingerling
2004	10,000,000	Walleye	Fry
2006	6,250,000	Walleye	Fry
	17,935	Walleye	Lrg. Fingerling
2011	8,000,000	Walleye	Fry



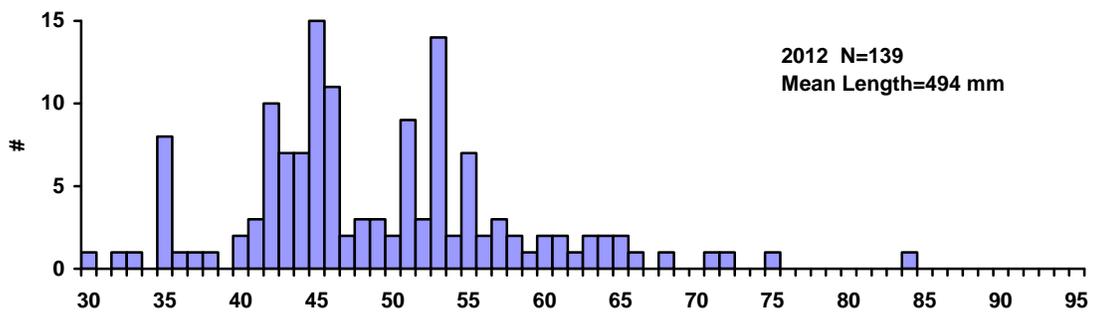
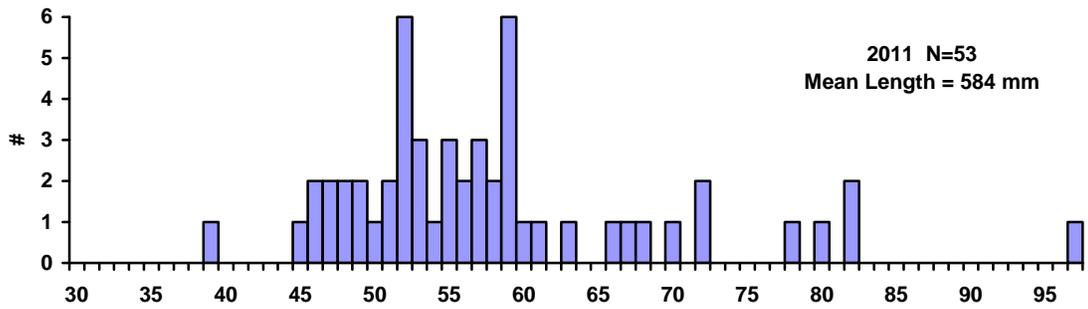
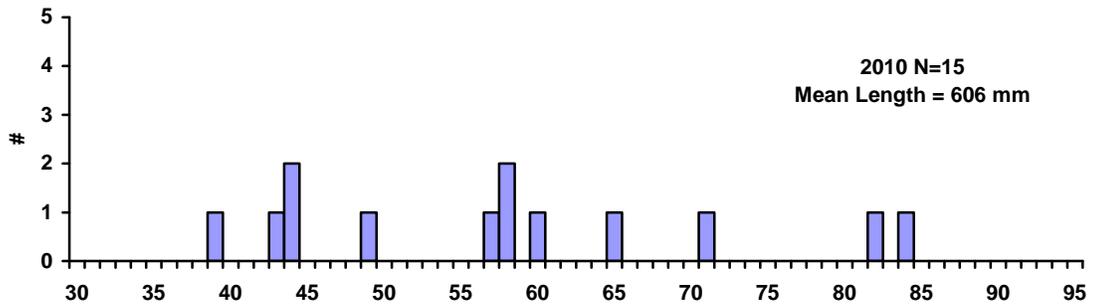
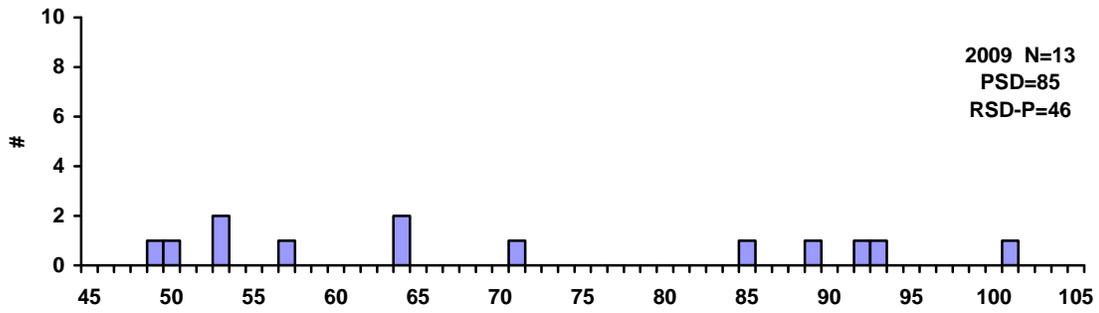
**Figure 1.** Length frequency histograms for walleye sampled with gill nets in Lake Thompson, Kingsbury County, 2009-2012.



**Figure 2.** Length frequency histograms for yellow perch sampled with gill nets in Lake Thompson, Kingsbury County, 2009-2012.



**Figure 3.** Length frequency histograms for black crappies sampled with trap nets in Lake Thompson, Kingsbury County, 2009-2012.



**Length-Centimeters**

**Figure 4.** Length frequency histograms for northern pike sampled with trap nets in Lake Thompson, Kingsbury County, 2009-2012.



**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.

<b>Species</b>	<b>Stock</b>	<b>Quality</b>	<b>Preferred</b>	<b>Memorable</b>	<b>Trophy</b>
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.