

BIOLOGICAL DATA

Methods:

Twin Lakes was sampled on July 7-8, 2008 with two 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. Sampling locations are displayed in Figure 4.

Winterkill:

Twin Lakes suffered a severe winterkill in 2007-2008 with only a few black bullheads and small common carp surviving. The lake has been restocked with adult black crappies and walleye fry (Table 9).

Results and Discussion:

Gill Net Catch

Black bullhead was the only species sampled (Table 1).

Table 1. Total catch from two overnight gill net sets at Twin Lakes, Sanborn County, July 7-8, 2008.

Species	Number	Percent	CPUE ¹	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Black Bullhead	3	100	1.5	± 0.6	35.9	--	--	--

* 5 years (1998, 2000, 2002, 2004, 2006)

Trap Net Catch

Black bullhead, black crappies, common carp, hybrid sunfish, were the only species sampled.

Table 2. Total catch from five overnight trap net sets at Twin Lakes, Sanborn County, July 7-8, 2008.

Species	Number	Percent	CPUE	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Black Bullhead	934	94.1	186.8	± 132.2	942.0	7	0	107
Black Crappie	44	4.4	8.8	± 8.2	15.0	23	0	98
Common Carp	14	1.4	2.8	± 3.6	0.5	--	--	--
Hybrid Sunfish	1	0.1	0.2	± 0.3	0.2	--	--	--

* 5 years (1998, 2000, 2002, 2004, 2006)

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

Walleye

Management objective: Establish and maintain a walleye fishery following winterkills and whenever water levels are sufficient to sustain fish life for a reasonable length of time.

The 2007-2008 winterkill eliminated the walleye population in Twin Lakes. Walleye fry were stocked in 2008 (Table 9) to reestablish the population but the stocked fish were too small for our nets at the time of the survey.

Table 3. Walleye gill-net CPUE, PSD, RSD-P, and mean Wr for Twin Lakes, Sanborn County, 2000-2008.

	2000	2001	2002	2003	2004	2005	2006	2007	2008	Mean*
CPUE	2.3		5.0		4.3		1.7		0.0	6.3
PSD	--		0		0		--		--	8
RSD-P	--		0		0		--		--	2
Mean Wr	--		92		79		--		--	85

* 5 years (1998, 2000, 2002, 2004, 2006)

Black Crappie

Management objective: Establish and maintain a black crappie fishery following winterkills and whenever water levels are sufficient to sustain fish life for a reasonable length of time.

The black crappies sampled during the survey were most likely stocked in the spring. Hopefully these adult fish will produce abundant offspring and speed the recovery of the fishery.

Table 5. Black crappie trap-net CPUE, PSD, RSD-P, and mean Wr for Twin Lakes, Sanborn County, 2000-2008.

	2000	2001	2002	2003	2004	2005	2006	2007	2008	Mean*
CPUE	19.9		8.1		7.0		36.7		8.8	15.0
PSD	1		43		80		21		23	42
RSD-P	0		10		49		2		0	16
Mean Wr	108		121		95		94		98	104

* 5 years (1996, 1998, 2000, 2002, 2004)

Black Bullhead

Management objective: Maintain a black bullhead population with a trap-net CPUE of no more than 100.

High trap net CPUE suggest that a large percentage of black bullheads survived the recent winterkill (Table 7), and therefore, bullhead abundance has increased

dramatically relative to other species. Bullhead abundance is now higher than our management objective after being very low since 2002.

Table 7. Black bullhead trap-net CPUE, PSD, RSD-P, and mean Wr for Twin Lakes, Sanborn County, 2000-2008.

	2000	2001	2002	2003	2004	2005	2006	2007	2008	Mean*
CPUE	2345.0		628.3		2.7		1.1		186.8	942.0
PSD	0		13		58		--		7	19
RSD-P	0		0		0		--		0	0
Mean Wr	--		--		88		--		107	88

* 5 years (1998, 2000, 2002, 2004, 2006)

All Species

Table 8. Gill-net (GN) and trap-net (TN) CPUE for all fish species sampled in Twin Lakes, Sanborn County, 2000-2008.

Species	2000	2001	2002	2003	2004	2005	2006	2007	2008
SNG (GN)	0.3		--		--		--		--
SNG (TN)	--		--		0.2		0.3		--
COC (GN)	0.3		0.3		0.7		2.0		--
COC (TN)	--		0.9		0.5		0.8		2.8
WHS (GN)	1.3		0.7		0.3		0.3		--
WHS (TN)	0.5		1.5		1.0		0.4		--
BIB (GN)	5.7		20.7		7.7		6.7		--
BIB (TN)	--		1.9		0.8		0.4		--
BLB (GN)	69.0		35.7		0.3		1.3		1.5
BLB (TN)	2,345.0		628.3		2.7		1.1		186.8
NOP (GN)	0.7		1.0		1.0		--		--
NOP (TN)	1.5		1.7		1.1		0.3		--
WHB (GN)	--		--		--		--		--
WHB (TN)	--		0.1		--		--		--
SMB (GN)	0.3		--		--		--		--
SMB (TN)	0.5		1.0		0.8		--		--
OSF (GN)	--		--		--		--		--
OSF (TN)	--		--		--		0.1		--
GSF (GN)	--		--		--		--		--
GSF (TN)	0.3		--		--		1.2		--
HYB (GN)	--		--		--		--		--
HYB (TN)	--		0.5		0.3		0.4		0.2
BLG (GN)	--		--		--		--		--
BLG (TN)	1.7		0.5		3.2		10.1		--
WHC (GN)	0.7		--		--		--		--
WHC (TN)	0.8		0.2		0.1		0.2		--
BLC (GN)	1.0		--		--		1.3		--
BLC (TN)	19.9		8.1		7.0		36.7		8.8
YEP (GN)	3.7		0.3		0.7		0.7		--
YEP (TN)	14.3		0.1		--		0.2		--
WAE (GN)	2.3		5.0		4.3		1.7		--
WAE (TN)	1.6		2.8		1.2		4.3		--

SNG (Shortnose Gar), COC (Common Carp), WHS (White Sucker), BIB (Bigmouth Buffalo), BLB (Black Bullhead), NOP (Northern Pike), WHB (White Bass), GSF (Green Sunfish), OSF (Orange-spotted Sunfish), HYB (Hybrid Sunfish), BLG (Bluegill), SMB (Smallmouth Bass), WHC (White Crappie), BLC (Black Crappie), YEP (Yellow Perch), WAE (Walleye)

MANAGEMENT RECOMMENDATIONS

1. Manage Twin Lakes for walleye and black crappies by stocking following winterkills and as needed to maintain fishable populations.

Table 9. Stocking record for Twin Lakes, Sanborn County, 1996-2008.

Year	Number	Species	Size
1996	38,200	Walleye	Sml. Fingerling
	2,620	Yellow Perch	Adult
1997	28,800	Walleye	Fingerling
	2,720	Yellow Perch	Adult
1998	26,200	Walleye	Fingerling
1999	13,585	Black Crappie	Juvenile
	26,200	Walleye	Fingerling
	11,895	Yellow Perch	Juvenile
2000	30,400	Walleye	Fingerling
	2,546	Yellow Perch	Adult
2001	26,640	Walleye	Fingerling
2003	262,000	Walleye	Fry
2005	26,400	Walleye	Fingerling
2006	27,000	Walleye	Fingerling
	2,824	Black Crappie	Adult
2008	3,399	Black Crappie	Adult
	300,000	Walleye	Fry

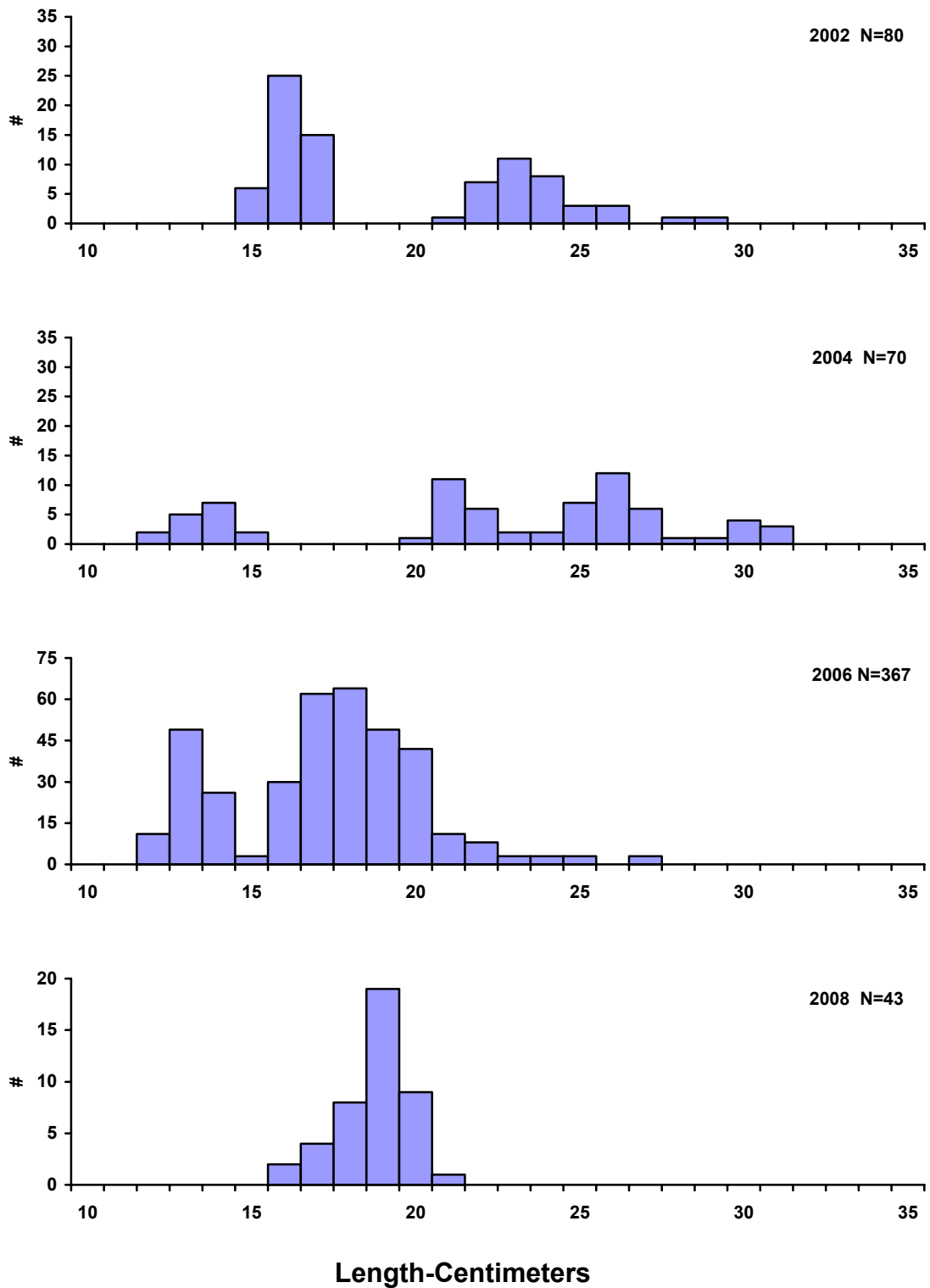


Figure 1. Length frequency histograms for black crappie sampled with trap nets in Twin Lakes, Sanborn County, 2002, 2004, 2006, 2008.

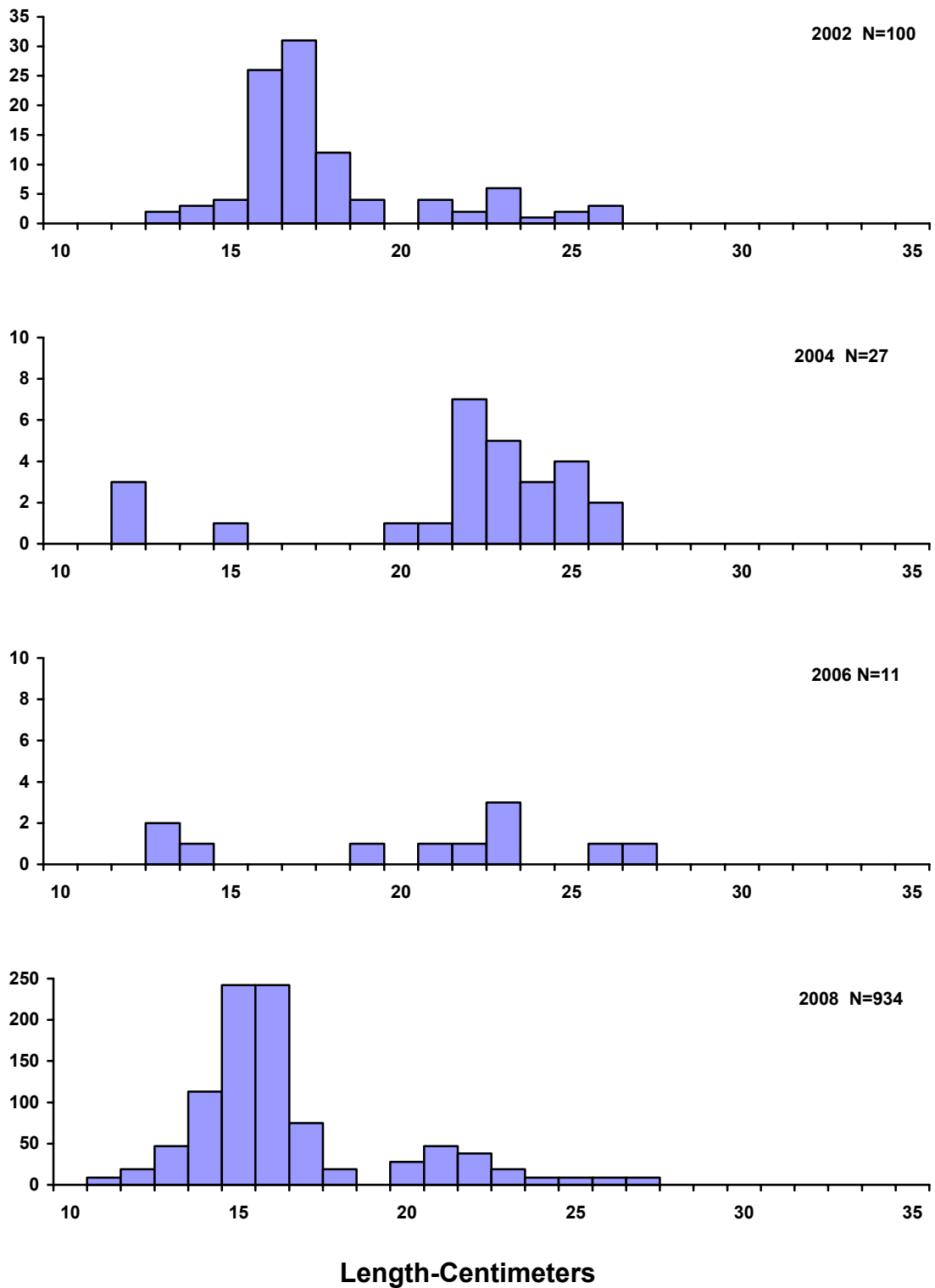
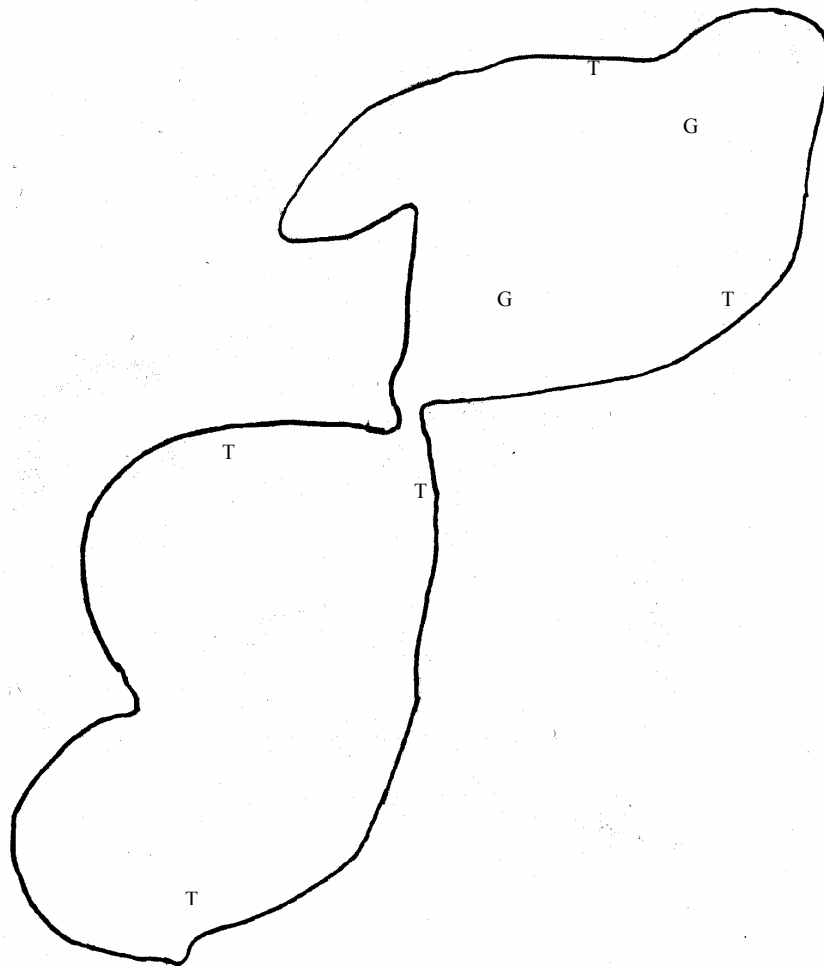


Figure 2. Length frequency histograms for black bullheads sampled with trap nets in Twin Lakes, Sanborn County, 2002, 2004, 2006, 2008.



Legend
Gill Nets: G
Trap Nets: T

Figure 3. Sampling locations on Twin Lakes, Sanborn County, 2008.

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.

Species	Stock	Quality	Preferred	Memorable	Trophy
Walleye	25	38	51	63	76
Sauger	20	30	38	51	63
Yellow perch	13	20	25	30	38
Black crappie	13	20	25	30	38
White crappie	13	20	25	30	38
Bluegill	8	15	20	25	30
Largemouth bass	20	30	38	51	63
Smallmouth bass	18	28	35	43	51
Northern pike	35	53	71	86	112
Channel catfish	28	41	61	71	91
Black bullhead	15	23	30	38	46
Common carp	28	41	53	66	84
Bigmouth buffalo	28	41	53	66	84
Smallmouth buffalo	28	41	53	66	84

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.