SOUTH DAKOTA STATEWIDE FISHERIES SURVEY
Twin Lakes, Sanborn County
2102-F-21-R-47
2014

Figure 1. Twin Lakes, Sanborn County

Legal Description: T106N-R62W-Sec.30-31; T106-R63-Sec. 24-25
Location from nearest town: 6 miles south and 3 miles west of Woonsocket, SD

Surface Area: 252 acres
Meandered (Y/N): no
OHWM elevation: no data
Outlet elevation: no data
Max. depth: 12.5 feet
Observed water level: 2-3 ft. low
Contour map available (Y/N): yes

Watershed area: 1,118 acres
Shoreline length: 13.1 miles
Date set: NA
Date set: NA
Mean depth: 6 feet
Lake volume: 1,512 acre feet
Date mapped: 1990

DENR beneficial use classifications: (5) warmwater semipermanent fish life propagation, (7) immersion recreation, (8) limited-contact recreation and (9) wildlife propagation and stock watering

Introduction

General

Twin Lakes was so named because its two basins are nearly identical in size and joined by a narrow channel. The lake is very shallow and susceptible to fish kills which makes it difficult to sustain consistent fishing opportunity.

Ownership of Lake and Adjacent Lakeshore Properties

Twin Lakes is not listed as meandered public water in the State of South Dakota Listing of Meandered Lakes. The fishery is managed by the South Dakota Department of Game, Fish and Parks (GFP). GFP also owns and manages a 50-acre Lake Access Area on the west side of the lake. The remainder of the shoreline is privately owned.

Fishing Access

The Twin Lakes Recreation Area, located on the west shore, contains a double lane boat ramp, boat dock, picnic area, primitive campground, public toilet and shore fishing access.

Water Quality and Aquatic Vegetation

The water was clear during the survey with a Secchi depth of nearly 3 m (117 in, Table 1). Beds of sago pondweed were observed around the lake.

Table 1. Water temperature, Secchi depth and observations/comments on water quality and aquatic vegetation in Twin Lakes, Sanborn County, 2005-2014.

Year	*Water Temp °C (°F)*	*Secchi Depth cm (in)*	*Observations/Comments (algae, aquatic vegetation, water quality, etc.)*
2014	26 (78)	298 (117)	Sago pondweed
2013	20 (68)	25 (10)	Sago pondweed, cattails
2011	-- (--)	224 (88)	Sago pondweed
2010	26 (79)	41 (16)	Sago pondweed, cattails, northern water milfoil
2009	-- (--)	107 (42)	Sago pondweed, cattails, northern water milfoil
2008	24 (76)	250 (98)	Cattails
2006	27 (80)	25 (10)	Cattails

Fish Community

Twin Lakes contains a relatively diverse fish community (Table 2) influenced by immigration of riverine species during periods of high water.

Table 2. Fish species commonly found in Twin Lakes, Sanborn County.

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

Fish Management

Twin Lakes experiences frequent winterkills (Table 3) due to its shallow basin and hypereutrophic condition. A severe winterkill occurred in 2007-2008 with only a few black bullheads and small common carp showing up in test nets set after ice out. The lake was restocked with adult black crappies and walleye fry in 2008 (Table 4), but may have winterkilled again in 2008-2009. Few fish were caught by anglers in 2009, and subsequently, the lake was stocked again that year with walleye and yellow perch. The lake winterkilled a third time during the winter of 2009-2010 prompting additional stocking of walleyes, black crappie and yellow perch.

Table 3. Fish kill history for Twin Lakes, Sanborn County.

Year	***Severity***	***Comments***
2010	Moderate	Moderate winterkill of COC, BLC, BLG, YEP and LMB.
2009	Light	Summer fish kill of black crappies observed during survey.
2008	Severe	Winterkill – only BLB and COC sampled
2007	Light	Light winterkill, test nets full of walleyes, crappies, etc.
2001	Moderate	Winterkill - Test nets had some of all species.

Table 4. Stocking history for Twin Lakes, Sanborn County, 2005-2014.

Year	***Number***	***Species***	***Size***
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
2009	253	Walleye	Adult
	849	Yellow Perch	Adult
	1,806	Yellow Perch	Juvenile
2010	2,828	Black Crappie	Adult
	53,770	Walleye	Fingerling
	69,782	Yellow Perch	Fingerling
2014	200	Northern Pike	Adult
	262,000	Walleye	Fry

Methods

Twin Lakes was sampled on July 9-10, 2014 with three overnight gill nets and five overnight trap nets. 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 (½, ¾, 1, 1¼, 1½, and 2 in) monofilament netting. The trap nets are constructed with 19-mm-bar-mesh (¾ 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.

Results and Discussion

Net Catch Results

Only northern pike and black bullhead were sampled in gill nets and trap nets in 2014 (Tables 5 and 7). The northern pike likely originated from the spring stocking of 200 adults (Table 4). Sixteen species have been sampled in netting surveys over the last 10 years, however only two were sampled in 2014 (Table 9).

Table 5. Total catch from three overnight gill nets set in Twin Lakes, Sanborn County, July 9-10, 2014.

Species	*#*	*%*	*CPUE[1]*	*80% C.I.*	*Mean CPUE**	*PSD*	*RSD-P*	*Mean Wr*
Northern Pike	21	61.8	7.0	±2.0	2.1	86	5	87
Black Bullhead	13	38.2	4.3	±3.0	21.1	0	0	--

*10 years (2005-2014)

Table 6. CPUE by length category for selected species sampled with gill nets in Twin Lakes, Sanborn County, July 9-10, 2014.

Species	*Substock*	*Stock*	*S-Q*	*Q-P*	*P+*	*All sizes*	*80% C.I.*
Northern Pike	--	7.0	1.0	5.7	0.3	7.0	2.0
Black Bullhead	--	4.3	4.3	--	--	4.3	3.0

Length categories can be found in Appendix A.

Table 7. Total catch from five overnight trap nets set in Twin Lakes, Sanborn County, July 9-10, 2014.

Species	*#*	*%*	*CPUE*	*80% C.I.*	*Mean CPUE**	*PSD*	*RSD-P*	*Mean Wr*
Black Bullhead	270	98.5	54.0	±39.2	277.1	0	0	--
Northern Pike	4	1.5	0.8	±0.6	2.3	--	--	--

*10 years (2005-2014)

Table 8. CPUE by length category for selected species sampled with trap nets in Twin Lakes, Sanborn County, July 9-10, 2014.

Species	*Substock*	*Stock*	*S-Q*	*Q-P*	*P+*	*All sizes*	*80% C.I.*
Black Bullhead	3.8	50.2	50.2	--	--	54.0	±39.2
Northern Pike	--	0.8	0.4	0.4	--	0.8	±0.6

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

Table 9. Gill-net (GN), or trap-net (TN) CPUE for selected fish species sampled in Twin Lakes, Sanborn County, 2005-2014.

Species	*Gear*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*
Bigmouth	GN		6.7		--	--	9.3	--		10.0	--
Buffalo	TN		0.4		--	--	8.2	3.0		2.2	--
Black	GN		1.3		1.5	6.3	63.3	60.7		10.0	4.3
Bullhead	TN		1.1		186.8	72.6	780.0	93.6		751.6	54.0
Black	GN		6.7		--	--	9.3	--		10.0	--
Crappie	TN		0.4		--	--	8.2	3.0		2.2	--
Bluegill	GN		--		--	--	--	--		--	--
	TN		10.1		--	0.4	1.4	--		--	--
Common	GN		2.0		--	--	2.3	0.3		--	--
Carp	TN		0.8		2.8	8.6	29.6	1.4		1.2	--
Green	GN		--		--	--	--	--		--	--
Sunfish	TN		1.2		--	--	--	--		--	--
Hybrid	GN		--		--	--	--	--		--	--
Sunfish	TN		0.4		0.2	6.2	--	--		--	--
Largemouth	GN		--		--	--	--	--		--	--
Bass	TN		--		--	--	0.2	--		--	--
Northern	GN		--		--	--	2.7	1.3		3.7	7.0
Pike	TN		0.3		--	--	2.2	1.2		11.6	0.8
O. S.	GN		--		--	--	1.0	--		--	--
Sunfish	TN		0.1		--	--	--	--		--	--
Shortnose	GN										--
Gar	TN		0.3		--	--	--	0.2		21.6	--
Smallmouth	GN		--		--	--	--	--		--	--
Bass	TN		--		--	--	--	--		0.2	--
Walleye	GN		1.7		--	--	2.3	--		--	--
	TN		4.3		--	--	--	--		--	--
White	GN		0.3		--	--	1.0	0.3		--	--
Sucker	TN		0.4		--	--	0.2	1.6		0.8	--
White	GN		--		--	--	--	--		--	--
Crappie	TN		0.2		--	--	--	--		--	--
Yellow	GN		0.7		--	--	--	--		--	--
Perch	TN		0.2		--	--	--	--		--	--

Discussion

Management Objective

- maintain a fishery for northern pike and black crappies

Management Strategy

- Continue attempts to maintain fishing opportunity by stocking adult northern pike and black crappie. Occasional stockings of walleye and yellow perch may also be used.

Shallow water depth, frequent fish kills and high nuisance fish abundance has made it difficult to sustain consistent fishing opportunity in Twin Lakes. The stockings of yellow perch, walleye and black crappie (Table 6) following the last winterkill in 2010 have failed to reestablish populations of these species. Looking at past sampling efforts (Table 9), northern pike and black crappie seem to be the only game species capable of producing short lived fishing opportunity.

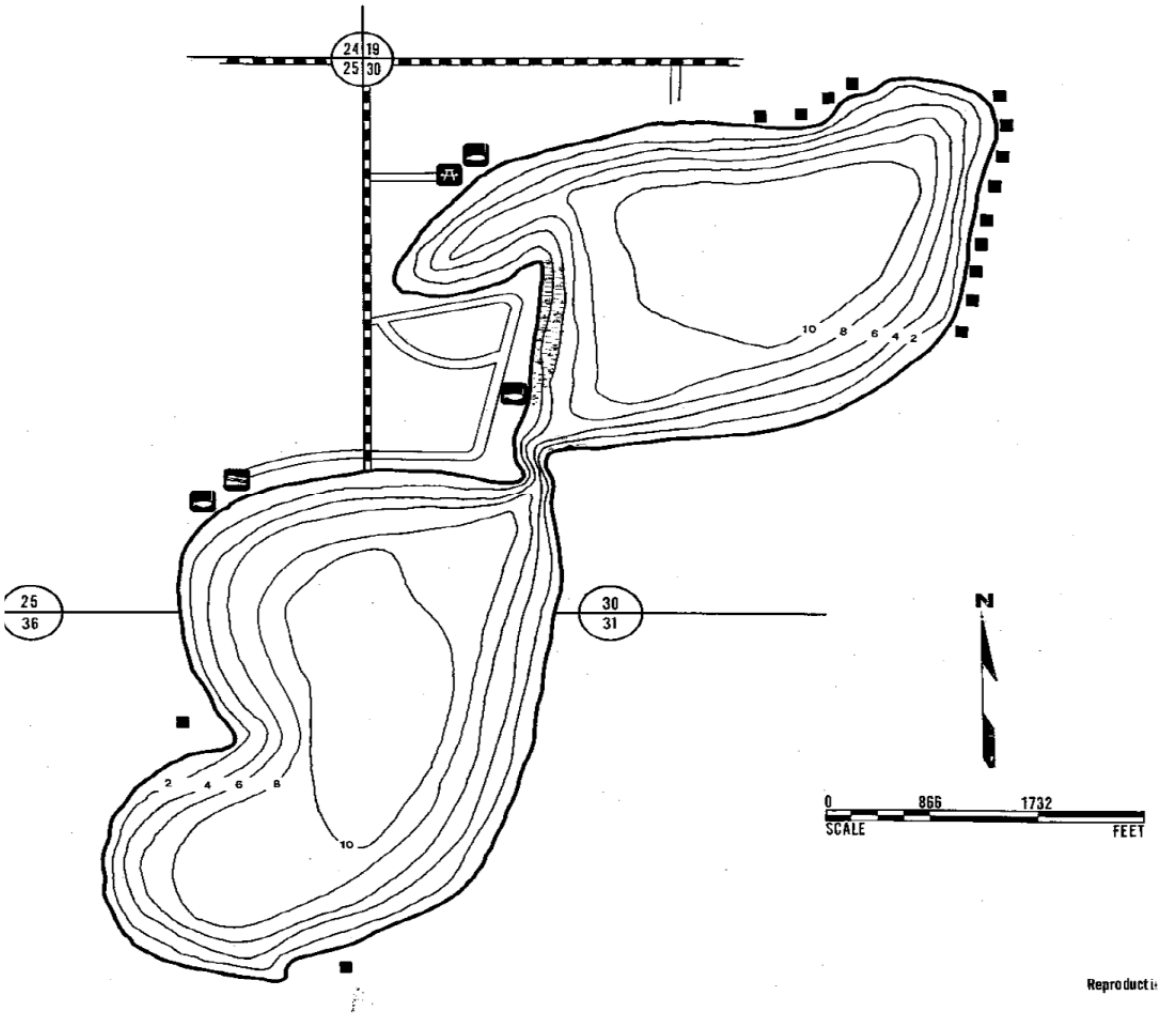

Figure 4. Contour map of Twin Lakes, Sanborn County. (insert appropriate lake contour map above as in example)

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:

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

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

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

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.