SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

Twin Lakes, Minnehaha County

2102-F-21-R-47

2014

Figure 1. Twin Lakes, Minnehaha County

Legal Description: T105N-R52W Sec. 16-17, 20-21
Location from nearest town: 6 miles north and 1 mile west of Humboldt, SD

Surface Area: 314 acres
Meandered (Y/N): no
OHWM elevation: none set
Outlet elevation: no data
Max. depth at outlet elevation: 21.2 feet
Observed water level: full
Contour map available (Y/N): yes

Watershed area: no data
Shoreline length: no data
Date set: NA
Date set: NA
Mean depth at outlet elevation: 11.2 feet
Lake volume: 3,487 acre-feet
Date mapped: 2012

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

Introduction

General

Twin Lakes was so named because of its two basins. Once separated, these are now joined by a manmade navigation channel.

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; however, the fishery is managed by the South Dakota Department of Game, Fish and Parks (GFP). GFP also owns and manages a 254 acre Game Production Area which includes much of the lakes. The remainder of the shoreline is privately owned.

Fishing Access

The Twin Lakes Fishing Access Area, located on the west side of the south lake, features a boat ramp, boat dock, toilet and parking for about 15 vehicle-trailer rigs. There are also several areas to shore fish located east of the boat ramp. A navigation channel connecting the north and south lakes was constructed in the winter of 2010-2011.

Water Quality and Aquatic Vegetation

The 2014 Secchi depth measurement was 2.0 m (79 in, Table 1). Abundant beds of sago pondweed (*Potamogeton pectinatus*), clasping leaf pondweed (*Potamogeton richardsonii*), northern water milfoil (*Myriophyllum exalbescens*), and coontail (*Ceratophyllum demersum*) were observed in the clear water at a depth of up to 1.82 m (6 ft) (Table 1). Common cattail (*Typha spp.*) and bulrush (*Scirpus spp.*) were abundant in shallow areas.

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

Year	***Water Temp ^{o}C (^{o}F)***	***Secchi Depth cm (in)***	***Observations/Comments (algae, aquatic vegetation, water quality, etc.)***
2014	23 (74)	201 (79)	Lots of sago, clasping leaf, coontail, northern milfoil
2013	27 (80)	269(106)	Sago, clasping leaf pondweed and coontail
2012	28 (82)	104 (41)	No observations were recorded
2011	26 (79)	221 (87)	Sago, clasping leaf pondweed and northern water milfoil
2009	17 (63)	366(144)	Lots of sago and clasping leaf pondweed
2007	28 (83)	79 (31)	Heavy sago pondweed and coontail around entire lake
2006	25 (77)	30 (12)	Algae bloom, sago, milfoil, cattails

Fish Community

Twin Lakes originally supported a simple fish community of walleyes, yellow perch, black bullhead and green sunfish (Table 2). Bluegills and common carp have since immigrated into the lake during a period of high water.

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

Game Species	*Other Species*
Walleye	Bluegill
Yellow Perch	Common Carp
Black Bullhead	Green Sunfish

Fish Management

Twin Lakes is managed for walleyes and yellow perch and these populations have been supplemented by occasional stocking (Table 3). In addition, a special walleye limit of one fish over 71 cm (28 in) exists to maintain high walleye abundance for controlling the black bullhead population and to provide high catch rates of quality fish.

Table 3. Stocking history for Twin Lakes, Minnehaha County, 2005-2014.

Year	*Number*	*Species*	*Size*
2005	19,616	Walleye	Large Fingerling
2006	31,030	Walleye	Fingerling
	5,372	Yellow Perch	Adult
2007	1,493	Yellow Perch	Adult
2009	29,30**0**	Walleye	Fingerling
	3,980	Yellow Perch	Adult
2011	29,120	Walleye	Fingerling
2012	58,730	Walleye	Fingerling
2013	2,548	Yellow Perch	Adult
2014	300,000	Walleye	Fry

Methods

Twin Lakes was sampled on July 14-15, 2014 with four overnight gill-net sets. 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.

Results and Discussion

Net Catch Results

Black bullhead and yellow perch comprised a substantial portion (82.7%) of the gill-net catch in 2014 (Table 4). Nearly all fish captured were stock length and longer (Table 5).

Table 4. Total catch from four overnight gill nets set in Twin Lakes, Minnehaha County, July 14-15, 2014.

Species	*#*	*%*	*CPUE*[1]	*80% C.I.*	*Mean CPUE**	*PSD*	*RSD-P*	*Mean Wr*
Black bullhead	125	42.4	31.3	±8.0	75.2	100	3	--
Yellow perch	119	40.3	29.8	±14.9	19.1	18	8	109
Walleye	50	16.9	12.5	±3.5	32.2	60	18	82
Common carp	1	0.3	0.3	±0.3	0.0	--	--	--

*10 years (2005-2014)

Table 5. CPUE by length category for selected species sampled with gill nets in Twin Lakes, Minnehaha County, July 14-15, 2014.

Species	*Substock*	*Stock*	*S-Q*	*Q-P*	*P+*	*All sizes*	*80% C.I.*
Black bullhead	--	31.3	--	30.3	1.0	31.3	±8.0
Yellow perch	--	29.8	24.3	3.2	2.3	29.8	±14.9
Walleye	1.3	11.2	4.5	4.7	2.0	12.5	±3.5
Common carp	--	0.3	0.3	--	--	0.3	±0.3

Length categories can be found in Appendix A.

Table 6. Gill-net CPUE for selected fish species sampled in Twin Lakes, Minnehaha County, 2005-2014.

Species	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*
Black Bullhead		122.5	42.8		66.0		44.3	108.5	111.3	31.3
Common Carp		--	--		--		--	--	--	0.3
Walleye		70.0	37.8		16.8		28.0	27.5	32.7	12.5
Yellow Perch		5.8	5.2		1.0		24.0	63.5	4.7	29.8

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

Walleye

Management Objective

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

Management Strategy

- Stock small walleye fingerlings the rate of 70/acre (21,980) as needed to achieve the management objective.

Although walleye abundance is below the management objective (Table 7), the majority of the fish sampled were 38-51 cm (15-20 in) long (Table 9, Figure 2). A few substock-length fish were sampled indicating some natural reproduction or stocking survival (Table 8).

Table 7. CPUE, PSD, RSD-P, and mean Wr for all walleye sampled with gill nets in Twin Lakes, Minnehaha County, 2005-2014. Columns for stocked years are shaded.

	2005	***2006***	***2007***	***2008***	***2009***	***2010***	***2011***	***2012***	***2013***	***2014***
CPUE		70.0	37.8		16.8		28.0	27.5	32.7	12.5
PSD		42	24		84		13	40	36	60
RSD-P		3	4		4		1	25	18	18
Mean Wr		97	92		97		84	74	95	82

Table 8. Walleye stocked into Twin Lakes, Minnehaha County, 2005-2014.

Year	***Number***	***Size***
2005	19,616	Large Fingerling
2006	31,030	Small Fingerling
2009	29,30**0**	Small Fingerling
2011	29,120	Small Fingerling
2012	58,730	Small Fingerling
2014	300,000	Fry

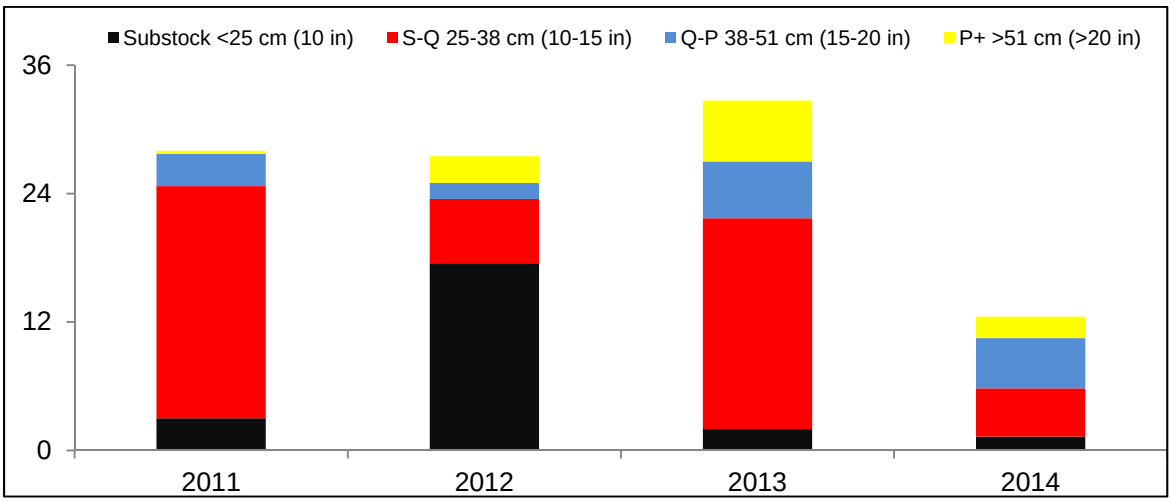

Figure 2. CPUE by length category for walleye sampled with gill nets in Twin Lakes, Kingsbury County, 2011, 2012, 2013, 2014.

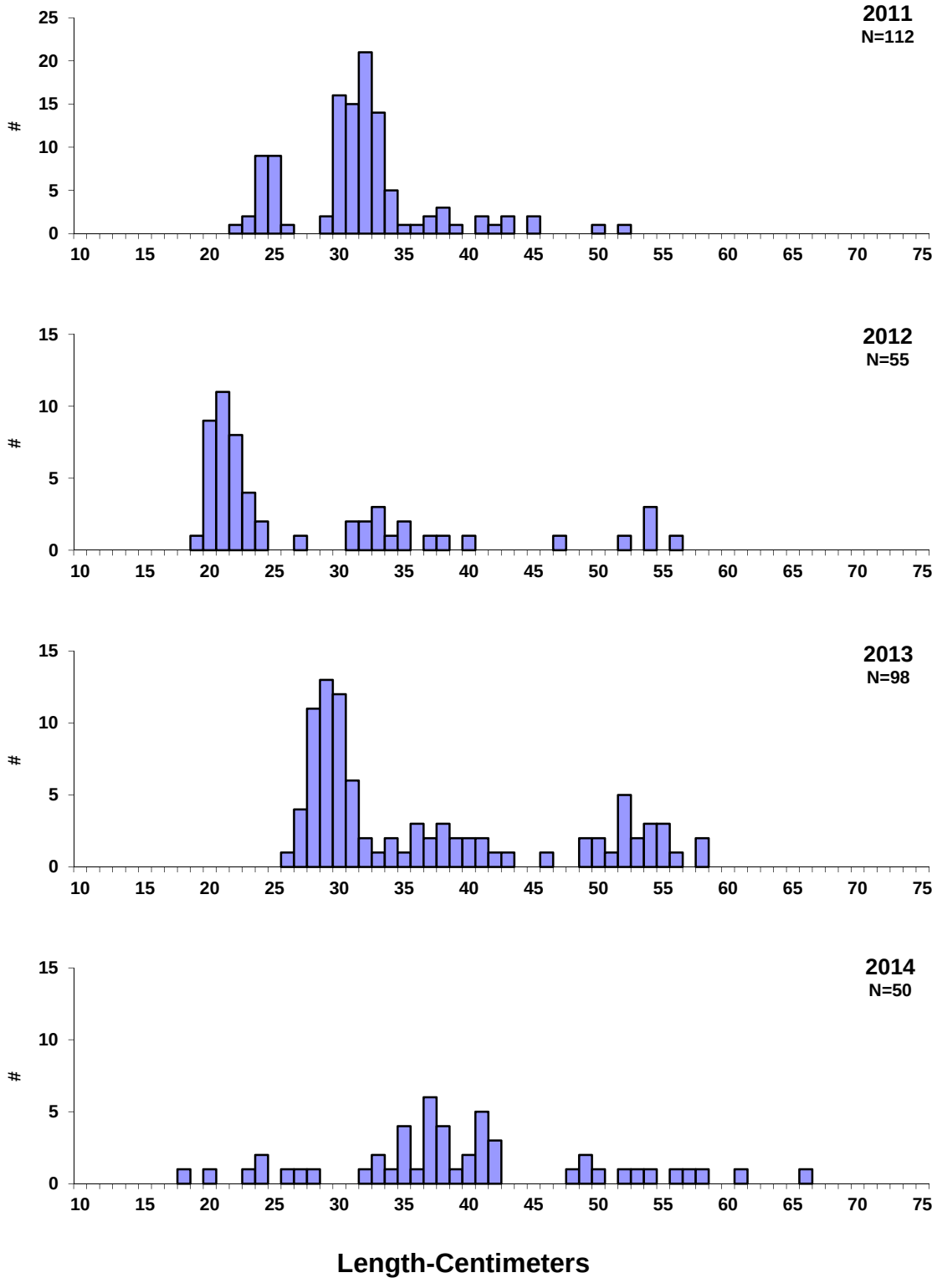

Figure 3. Length frequency histograms for walleyes sampled with gill nets in Twin Lakes, Minnehaha County, 2011, 2012, 2013, 2014.

Yellow Perch

Yellow perch abundance has fluctuated since 2006 (Table 10) and the majority of the fish sampled were 14-18 cm (3.5-7 in) long (Table 12, Figure 4). The length of fish in this group and their absence from 2013 nets suggest they were produced last year (Figure 5). No perch were stocked between 2009 and 2013 (Table 11), so these fish were naturally produced.

Table 10. CPUE, PSD, RSD-P, and mean Wr for all yellow perch sampled with gill nets in Twin Lakes, Minnehaha County, 2005-2014. Columns for stocked years are shaded.

	2005	***2006***	***2007***	***2008***	***2009***	***2010***	***2011***	***2012***	***2013***	***2014***
CPUE		5.8	5.2		1.0		24.0	63.5	4.7	29.8
PSD		75	69		--		71	97	86	18
RSD-P		42	38		--		21	54	79	8
Mean Wr		101	109		--		108	100	119	109

Table 11. Yellow perch stocked into Twin Lakes, Minnehaha County, 2005-2014.

Year	***Number***	***Size***
2006	5,372	Adult
2007	1,493	Adult
2009	3,980	Adult
2013	2,548	Adult

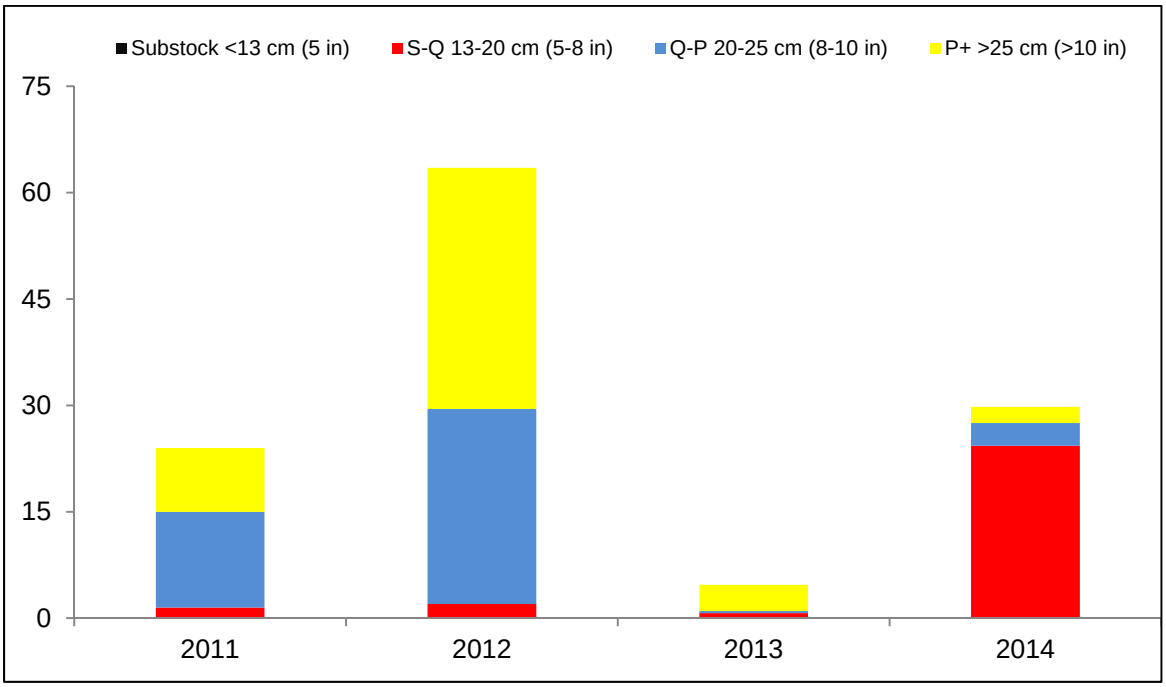

Figure 4. CPUE by length category for yellow perch sampled with gill nets in Twin Lakes, Minnehaha County, 2011, 2012, 2013, 2014.

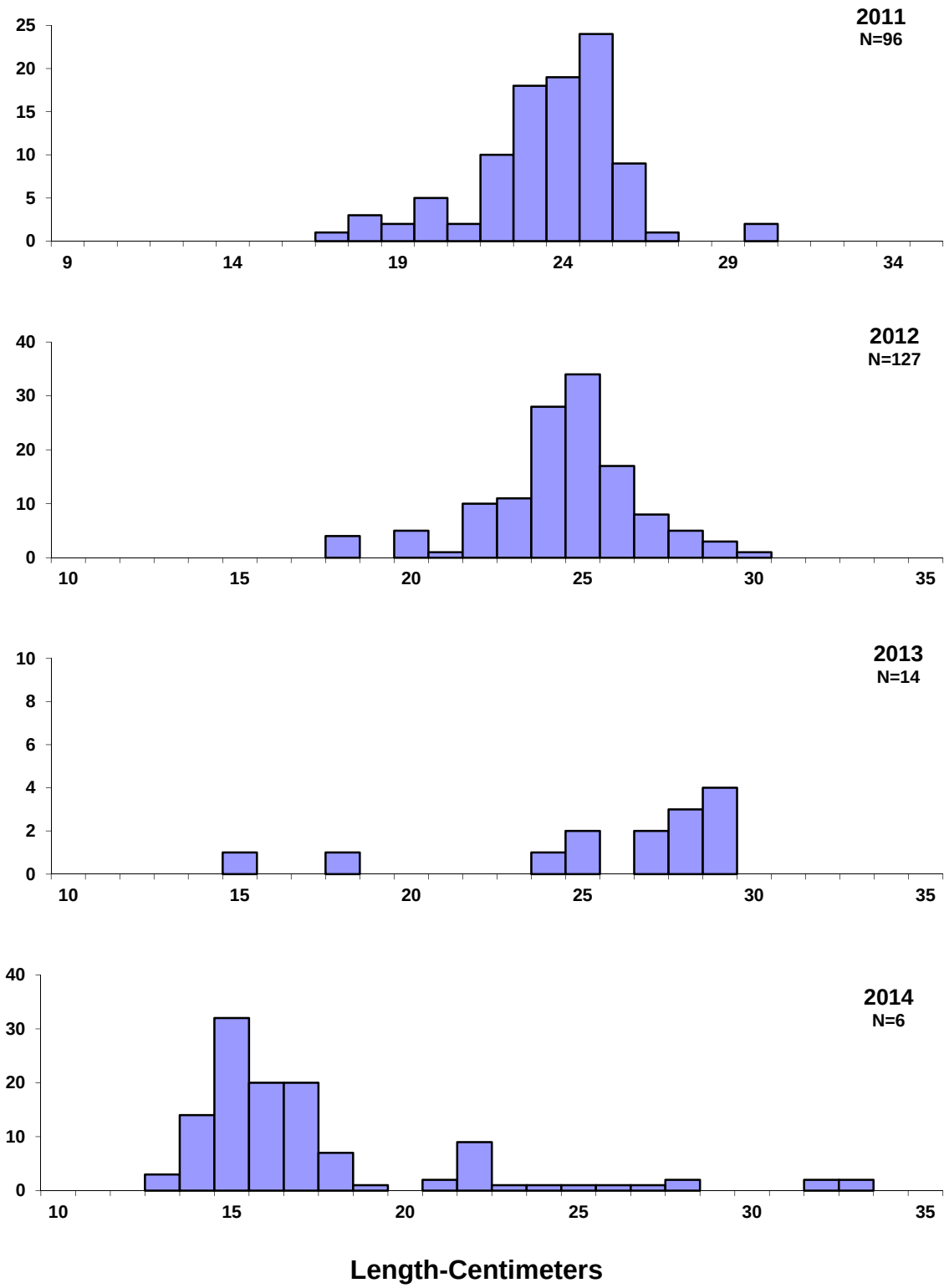

Figure 5. Length frequency histograms for yellow perch sampled with gill nets in Twin Lakes, Minnehaha County, 2011, 2012, 2013, 2014.

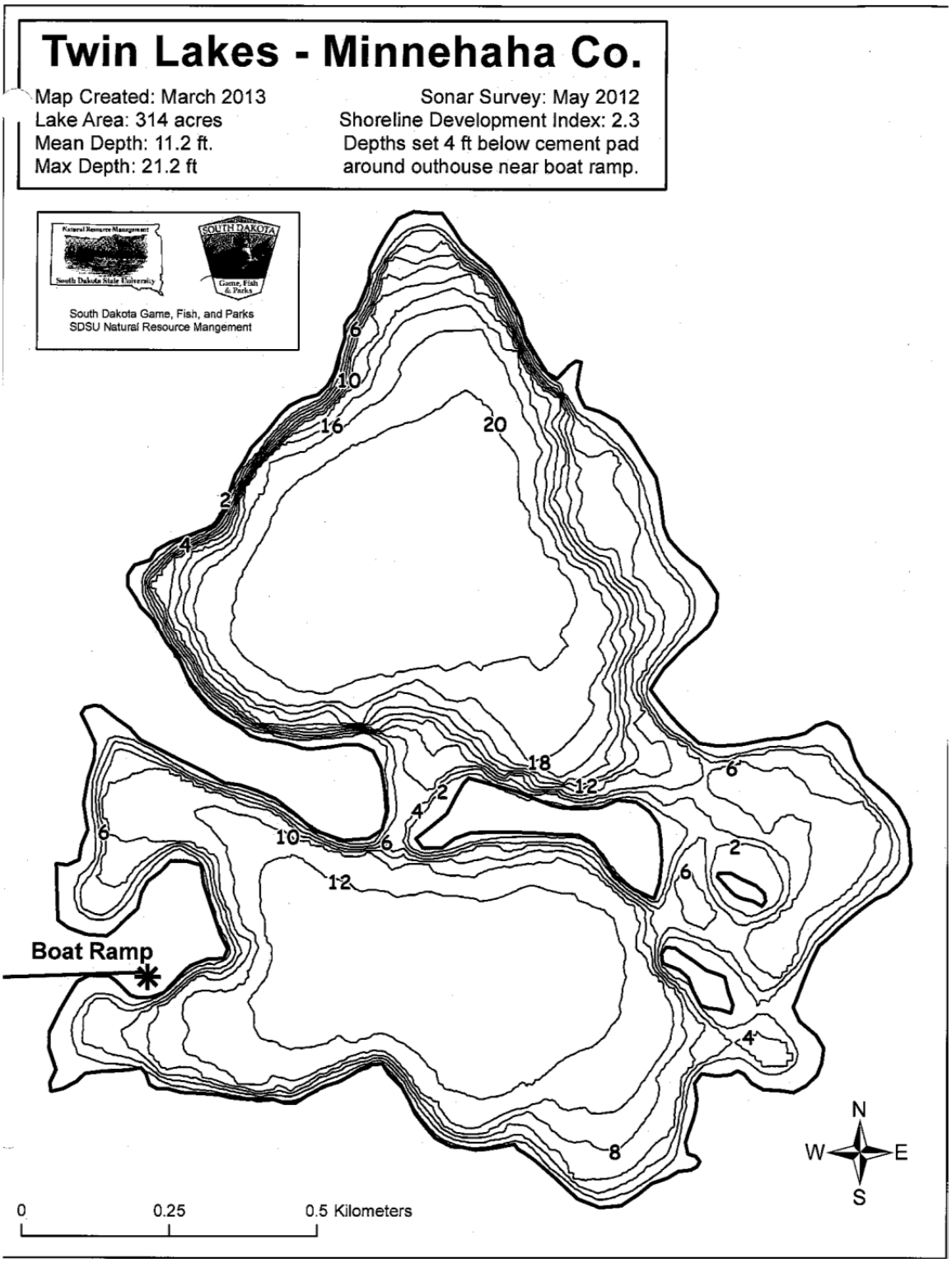

Figure 6. Contour map of Twin Lakes, Minnehaha County.

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:

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

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.