

## Reid/Round Lake Complex

### Site Description

---

#### Location

Water designation number (WDN)	18-0010-00
Legal description	T118N-R57W-Sec. 18,19 T118N-R58W-Sec. 13, 14, 23, 24
County (ies)	Clark
Location from nearest town	5.5 miles west and 4.5 miles south of Bradley, SD.

#### Survey Dates and Sampling Information

Survey dates	August 18-19, 2015 (GN)
Gill net sets (n)	6

#### Morphometry

Watershed area (acres)	44,706
Surface area (acres)	≈ 1,280
Maximum depth (ft)	25
Mean depth (ft)	unknown

#### Ownership and Public Access

The Reid/Round Lake Complex is a meandered waterbody owned by the State of South Dakota and the fishery is managed by the SDGFP. Two public access sites exist (including boat ramps); one is located on the northwest shoreline of Reid Lake and the other is located on the west shoreline of Round Lake and they are maintained by the SDGFP (Figure 1). Reid Lake is closed to boating from October 20 through December 31. Lands adjacent to the lake complex are owned by the State of South Dakota and private individuals.

#### Watershed and Land Use

The 44,706 acre Reid Lake sub-watershed (HUC-12) is located within the larger Grass, Dry, and Still Lakes (HUC-10) watershed. Land use within the watershed is primarily agricultural with a mix of pasture or grassland, cropland, and scattered shelterbelts.

#### Water Level Observations

Water level information was not available for the Reid/Round Lake Complex in 2015.

#### Fish Management Information

Primary species	walleye, yellow perch
Other species	black bullhead, green sunfish, northern pike, rock bass
Lake-specific regulations	none
Management classification	warm-water marginal
Fish consumption advisories	Mercury: walleye >23". See the South Dakota Fishing Handbook for more details on meal and portion size recommendations. Also see Department of Health website: <a href="http://doh.sd.gov/food/fish-advisories.aspx">http://doh.sd.gov/food/fish-advisories.aspx</a> for more information.

---



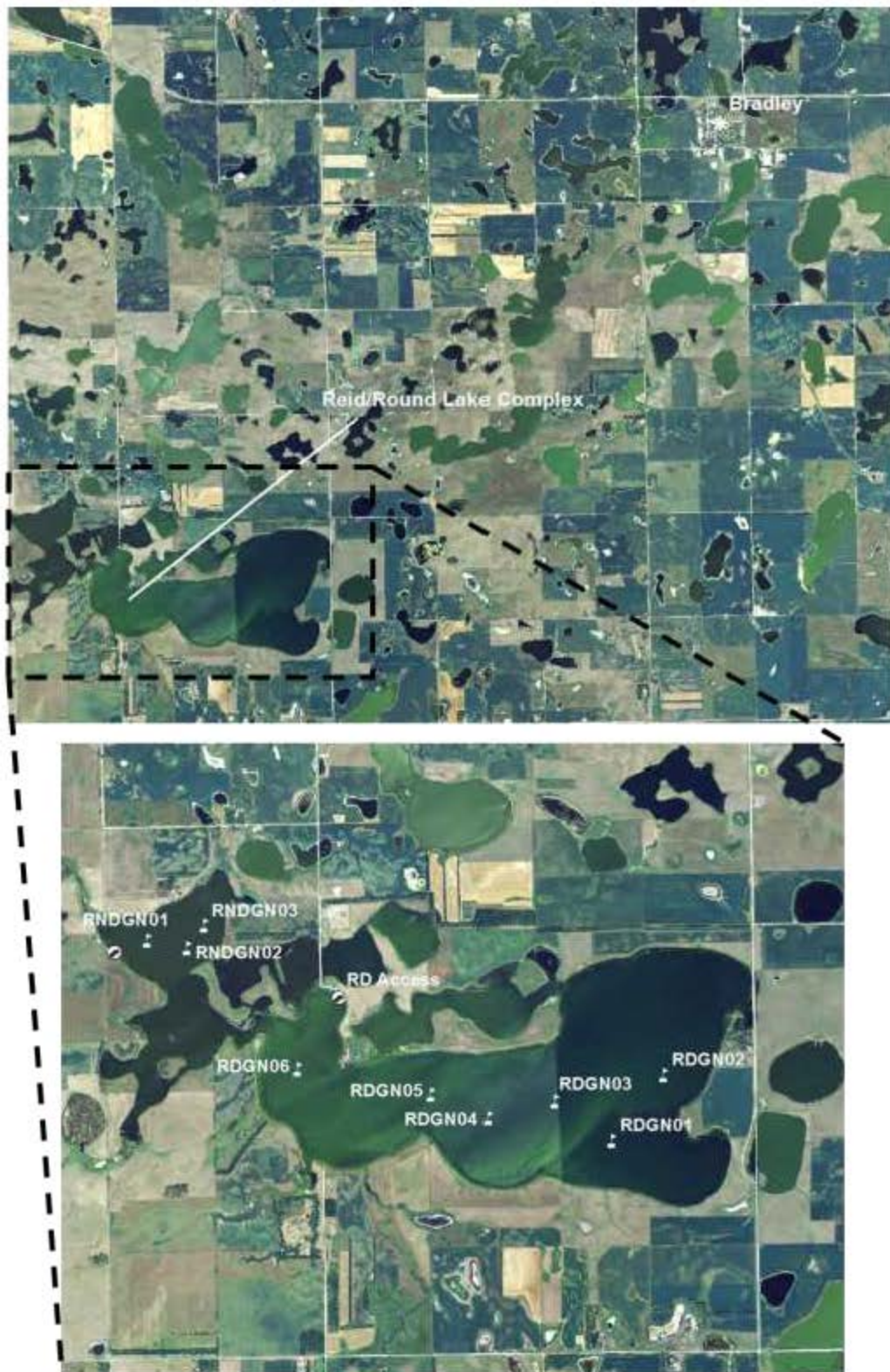


Figure 1. Map depicting geographic location of the Reid/Round Lake Complex from Bradley, Clark County, South Dakota (top). Also noted are access and standardized net locations for Reid and Round lakes Lake (bottom). RND = Round Lake; RD = Reid Lake; GN = gill nets.

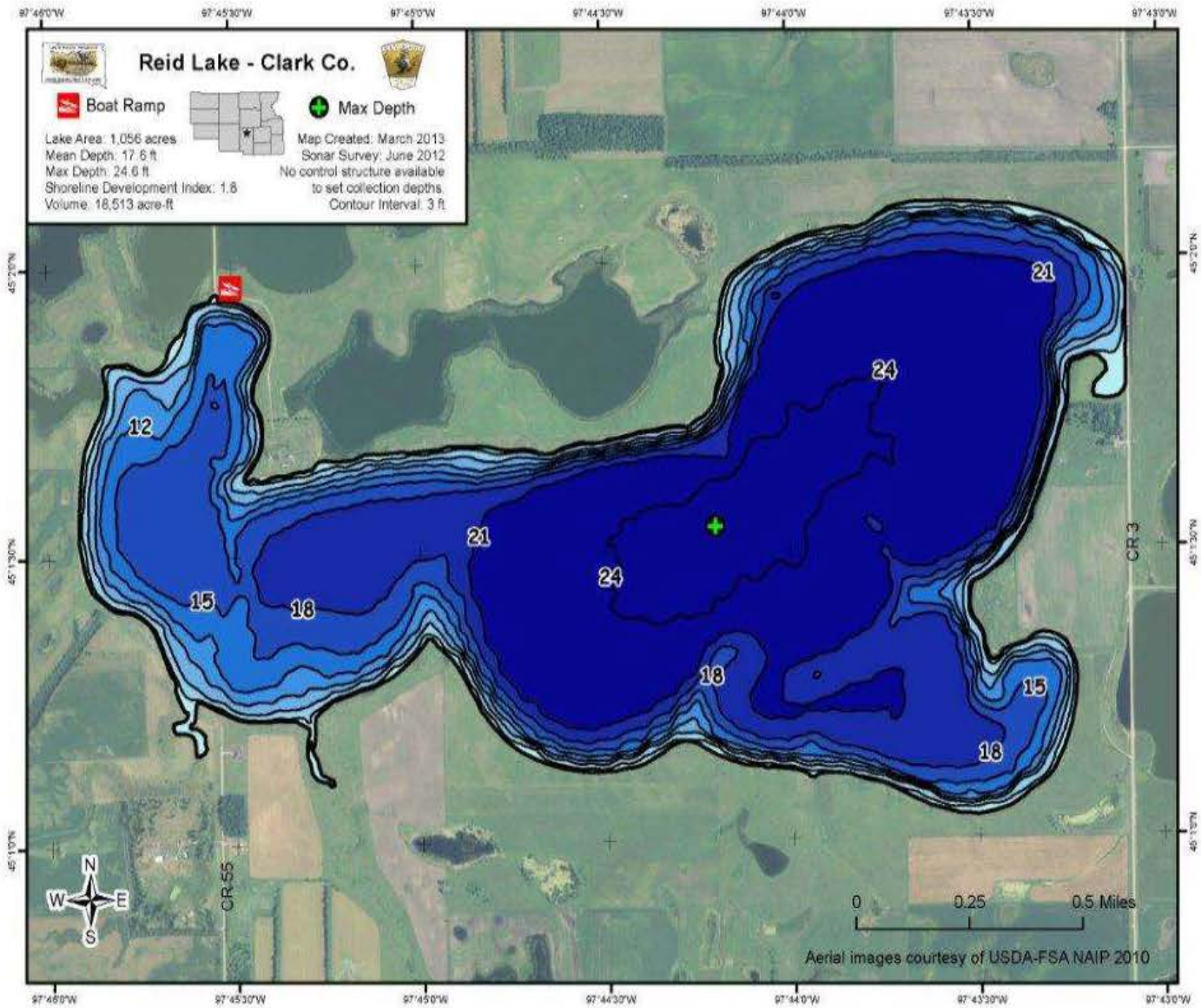


Figure 2. Map depicting the access location and depth contours of Reid Lake, Clark County, South Dakota.

## Management Objectives

- 1) Maintain a mean gill net CPUE of stock-length walleye  $\geq 10$ , a PSD of 30-60, and a PSD-P of 5-10.
- 2) Maintain a mean gill net CPUE of stock-length yellow perch  $\geq 30$ , a PSD of 30-60, and a PSD-P of 5-10.

## Results and Discussion

Prior to 1990's the Reid/Round Lake Complex was a series of shallow sloughs that did not support sport fisheries. Above average precipitation during the 1990's provided an increase in the water surface area and depth of Reid, Round and nearby sloughs. Subsequently, both Reid and Round lakes have been able to sustain sport fisheries. Currently the lakes are connected and treated as one fishery which is managed for walleye and yellow perch. Beginning in 2015 the two lakes were surveyed as one complex and data were compared to past Reid Lake data for this report.

### *Primary Species*

Walleye: The mean gill net CPUE of stock-length walleye during 2015 was 16.2 (Table 1) and above the minimum objective ( $\geq 10$  stock-length walleye/net night; Table 3). The 2015 gill net CPUE represents an increase from the 2012 CPUE of 8.7 (Table 2), and indicates high relative abundance.

Walleye captured in gill nets during 2015 ranged in TL from 12 to 68 cm (4.7 to 26.8 in), had a PSD of 47 and PSD-P of 19 (Table 1; Figure 3). The PSD was within the management objective range (30-60) and the PSD-P was above the management objective range (5-10; Table 3).

Walleye recruitment has been consistent, as year classes have been produced in eight of the last nine years (Table 4). Natural reproduction does contribute to the population in the Reid Lake/Round Lake Complex. No walleye were stocked in 2007, 2009, 2010, 2013 and 2015; yet fish from each year class was represented in the 2015 gill net survey and collectively they comprised 50% of walleye captured (Tables 4-6). The contribution of stocked or naturally-produced walleye to year classes produced during stocked years is unknown, as stocked walleye were unmarked making it difficult to differentiate stocked from naturally-produced walleye.

Growth rates appear to be adequate with the weighted mean TL at capture for age-1 and age-2 walleye being 256 and 373 mm (10.1 and 14.7 in), respectively (Table 5). Walleye were in good condition with mean  $W_r$  values ranging from 89-96 for all length groups sampled and the mean  $W_r$  of stock-length walleye in the 2015 gill net catch was 92 (Table 1).

Yellow Perch: The 2015 mean gill net CPUE of stock-length yellow perch was 61.2 (Table 1) and above the minimum objective ( $\geq 30$  stock-length perch/net night; Table 3). The 2015 gill net CPUE indicated high relative abundance. Recruitment is relatively consistent with five year-classes present (Table 7-8).

Yellow perch captured in the 2015 gill net catch ranged in TL from 8 to 34 cm (3.1 to 13.4 in), had a PSD of 80 and a PSD-P of 7 (Figure 4). The 2015 PSD was above the management objective of 30-60 as the majority of yellow perch captured were between quality and preferred length (Figure 4).

The weighted mean TL at capture for age-2 yellow perch was 219 mm (8.6 in; Table 8). Mean  $W_r$  values of gill net captured yellow perch in 2015 ranged from 97 to 110 for all length categories sampled with the mean  $W_r$  of stock-length yellow perch being 106 (Table 1).

### *Other Species*

Black Bullhead: The 2015 mean gill net CPUE of stock-length black bullhead was 13.8 (Table 1) and represents a decrease from the 2012 survey. Bullhead abundance should continue to be monitored but at current levels few negative effects on the fishery can be expected.

Other: Low numbers of northern pike and rock bass were captured during the 2015 gill net survey.

## **Management Recommendations**

- 1) Conduct fish community surveys utilizing gill nets on an every third year basis (next survey scheduled in summer 2018) to monitor fish relative abundance, fish population size structures, fish growth, and stocking success.
- 2) Stock walleye on a biennial basis ( $\approx 500$  fry/acre) to establish additional year classes.
- 3) Collect otoliths from walleye and yellow perch to assess age structure and growth rates of each population.
- 4) Monitor winter and summer kill events. In cases of substantial winter or summer kill the need to re-establish a fishery in the Reid/Round Lake Complex should be evaluated. If water levels are sufficient, walleye and yellow perch should be stocked to re-establish a fish community.

Table 1. Mean catch rate (CPUE; catch/net night) of stock-length fish, proportional size distribution of quality- (PSD) and preferred-length fish (PSD-P), and mean relative weight (Wr) of stock-length fish for various fish species captured in experimental gill nets from Reid/Round Lake Complex, 2015. Confidence intervals include 80 percent ( $\pm$  CI-80) or 90 percent ( $\pm$  CI-90). BLB= black bullhead; NOP= northern pike; ROB= rock bass; WAE= walleye; YEP= yellow perch

Species	Abundance		Stock Density Indices				Condition	
	CPUE	CI-80	PSD	CI-90	PSD-P	CI-90	Wr	CI-90
<i>Gill nets</i>								
BLB	13.8	6.2	82	7	45	10	109	1
NOP	0.2	0.3	100	---	100	---	92	---
ROB	0.2	0.3	0	---	0	---	110	---
WAE	16.2	3.2	47	9	19	7	92	1
YEP	61.2	15.0	80	4	7	3	106	0

Table 2. Historic mean catch rate (CPUE; catch/net night) of stock-length fish for various fish species captured in experimental gill nets from Reid Lake in 2006, 2009 and 2012, and Reid/Round Lake Complex in 2015. BLB= black bullhead; NOP= northern pike; ROB= rock bass; WAE= walleye; YEP= yellow perch

Species	CPUE			
	2006	2009	2012	2015
<i>Gill nets</i>				
BLB	0.0	0.0	38.2	13.8
NOP	0.0	0.3	0.0	0.2
ROB	0.0	0.0	0.0	0.2
WAE	21.8	13.3	8.7	16.2
YEP	81.8	228.5	145.3	61.2

Table 3. Mean catch rate (CPUE; catch/net night) of stock-length fish, proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish, and mean relative weight (Wr) for selected species captured in experimental gill nets from Reid Lake in 2006, 2009 and 2012, and the Reid/Round Lake Complex in 2015. WAE = walleye; YEP = yellow perch

Species	2006	2009	2012	2015	Objective
<i>Gill nets</i>					
WAE					
CPUE	22	13	9	16	$\geq 10$
PSD	54	39	83	47	30-60
PSD-P	29	21	31	19	5-10
Wr	90	92	92	92	---
YEP					
CPUE	82	229	145	61	$\geq 30$
PSD	27	20	23	80	30-60
PSD-P	5	5	3	7	5-10
Wr	115	108	103	106	---

Table 4. Year class distribution based on the expanded age/length summary for walleye sampled in gill nets and associated stocking history (Number stocked x 1,000) from Reid Lake in 2006, 2009 and 2012, and Reid/Round Lake Complex in 2015.

Survey Year	Year Class													
	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002
2015 <sup>1</sup>	81	76	13	25		4	5	3	1			1		
2012 <sup>1</sup>	---	---	---	10	9	9	21	8						
2009 <sup>1</sup>	---	---	---	---	---	---	66	62	8	3	2	5	5	3
2006 <sup>1,2</sup>	---	---	---	---	---	---	---	---	---	2	28	41	21	15
# stocked														
fry		600		600				1200				1000		
small fingerling														
large fingerling											14			

<sup>1</sup> Older walleye were sampled, but are not reported in this table

<sup>2</sup> Monofilament gill net mesh size change (0.75", 1.00", 1.25", 1.50", 2.00" and 2.50")

Table 5. Weighted mean TL at capture (mm) for walleye age-0 through age-10 captured in experimental gill nets (expanded sample size) from Reid Lake in 2006, 2009 and 2012, and Reid/Round Lake Complex in 2015. Note: sampling was conducted at approximately the same time during each year allowing comparisons among years to monitor growth trends.

Year	Age										
	0	1	2	3	4	5	6	7	8	9	10
2015 <sup>1</sup>	148(81)	256(76)	373(13)	453(25)	---	571(4)	569(5)	621(3)	611(1)	---	---
2012 <sup>1</sup>	134(10)	304(9)	419(9)	487(21)	522(8)	---	---	---	---	---	---
2009 <sup>1</sup>	139(66)	267(62)	422(8)	489(3)	512(2)	515(5)	572(5)	578(3)	---	621(2)	520(1)
2006 <sup>2</sup>	181(2)	281(28)	357(41)	447(21)	518(15)	533(4)	621(3)	577(13)	650(1)	648(7)	655(1)

<sup>1</sup> Older walleye were sampled, but are not reported in this table

<sup>2</sup> Monofilament gill net mesh size change (0.75", 1.00", 1.25", 1.50", 2.00" and 2.50")

Table 6. Stocking history including size and number for fishes stocked into Reid and Round, 2002-2015. WAE= walleye

Year	Lake	Species	Size	Number
2004	Reid	WAE	fry	1,000,000
2005	Reid	WAE	large fingerling	14,101
2006	Round	WAE	fry	100,000
2007	Round	WAE	fry	100,000
2008	Reid	WAE	fry	1,200,000
2012	Reid	WAE	fry	600,000
2012	Round	WAE	fry	50,000
2014	Reid	WAE	fry	600,000
2014	Round	WAE	fry	50,000

Table 7. Year class distribution based on the expanded age/length summary for yellow perch sampled in gill nets from Reid Lake in 2009 and 2012, and Reid/Round Lake Complex in 2015.

Survey Year	Year Class									
	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006
2015	39		355		7	3	1			
2012	---	---	---	---	528	460	8	11		
2009	---	---	---	---	---	---		1108	253	13

Table 8. Weighted mean TL (mm) at capture for yellow perch captured in experimental gill nets (expanded sample size) from Reid Lake in 2009 and 2012, and Reid/Round Lake Complex in 2015.

Year	Age						
	0	1	2	3	4	5	6
2015	94(39)	---	219(355)	---	288(7)	311(3)	342(1)
2012	---	138(528)	198(460)	280(8)	304(11)	---	---
2009	---	168(1108)	239(253)	303(13)	---	---	---



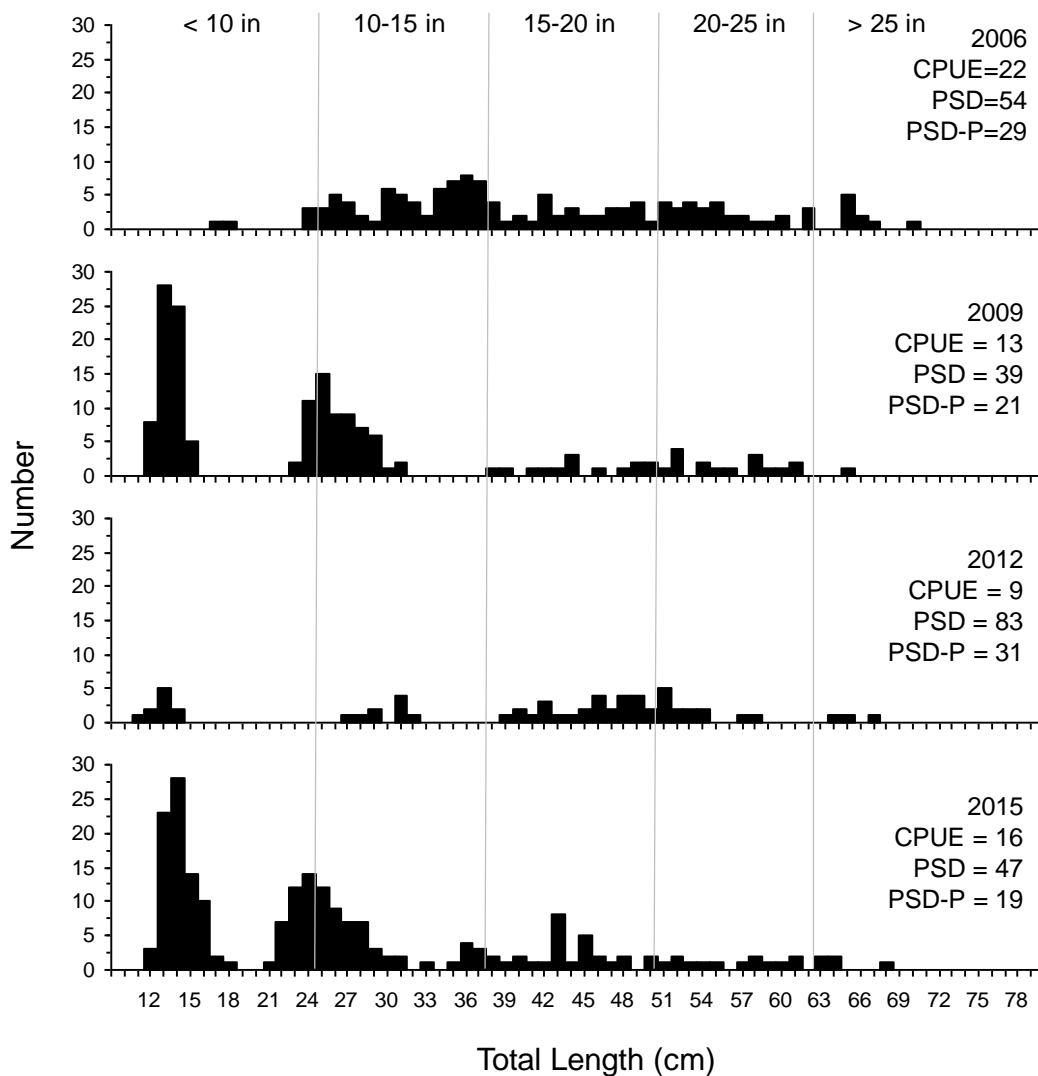


Figure 3. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish for walleye captured using experimental gill nets in Reid Lake in 2006, 2009 and 2012, and Reid/Round Lake Complex in 2015.

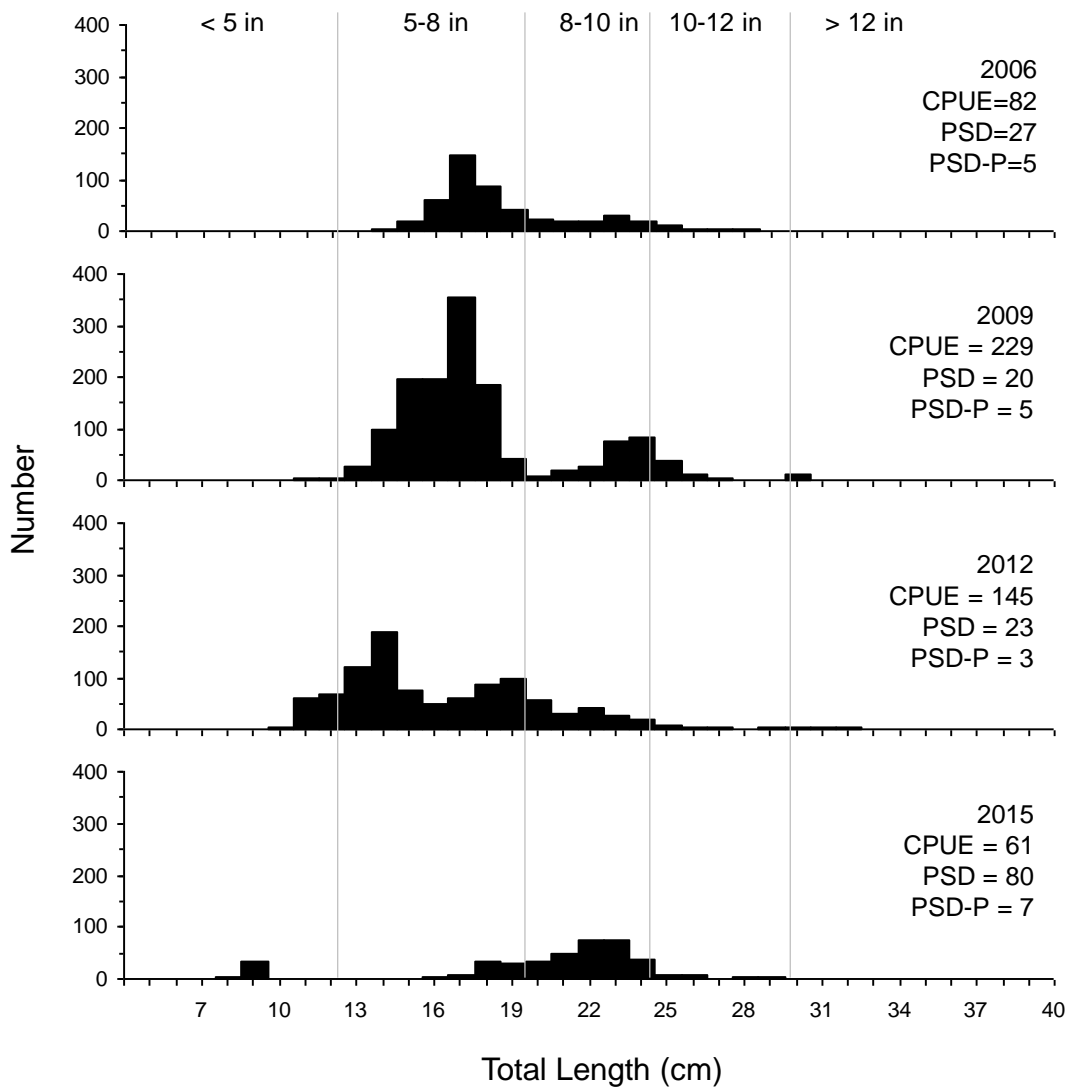


Figure 4. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish for yellow perch captured using experimental gill nets in Reid Lake in 2006, 2009 and 2012, and Reid/Round Lake Complex in 2015.