

# Clear Lake

## Site Description

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### Location

Water designation number (WDN)	48-0032-00
Legal description	T126N-R53W-Sec.18,19 T126N-R54W-Sec. 12,13,14,24
County (ies)	Marshall
Location from nearest town	3 miles southeast of Lake City, SD

### Survey Dates and Sampling Information

Survey dates	July 17-19, 2012 (FN, GN) September 24, 2012 (EF-WAE)
Frame net sets (n)	18
Gill net sets (n)	6
Electrofishing-WAE (min)	61

### Morphometry (Figure 1)

Watershed area (acres)	21,826
Surface area (acres)	1,170
Maximum depth (ft)	20
Mean depth (ft)	12

### Ownership and Public Access

Clear Lake is a meandered lake owned by the State of South Dakota and the fishery is managed by the SDGFP. A single public access site maintained by SDGFP is located on the southeastern shore. The access site includes a double-lane concrete boat ramp, dock, picnic area, and primitive restroom (Figure 1; Figure 2). Lands adjacent to Clear Lake are under mixed ownership including private individuals, Bureau of Indian Affairs, and SDGFP.

### Watershed and Land Use

The Clear Lake watershed is dominated by agricultural with a mix of hay/pasture land, cropland, and scattered shelterbelts.

### Water Level Observations

The South Dakota Water Management Board established OHWM is 1823.7 fmsl, and the outlet elevation of Clear Lake is 1822.5 fmsl. The elevation of Clear Lake on May 16, 2012 was 1823.0 fmsl and indicated a slight increase from the fall 2011 elevation of 1822.4 fmsl. The water level had declined to an elevation of 1821.4 fmsl on September 26, 2012.

### Fish Management Information

Primary species	Largemouth Bass, Smallmouth Bass, Walleye, Yellow Perch
Other species	Black Bullhead, Black Crappie, Bluegill, Common Carp, Green Sunfish, Northern Pike, White Sucker
Lake-specific regulations	Largemouth/Smallmouth Bass: Only those less than 14", or 18" and longer may be taken. Of those no more than one may be 18" or longer. Walleye: minimum length 15".
Management classification	warm-water permanent
Fish consumption advisories	none

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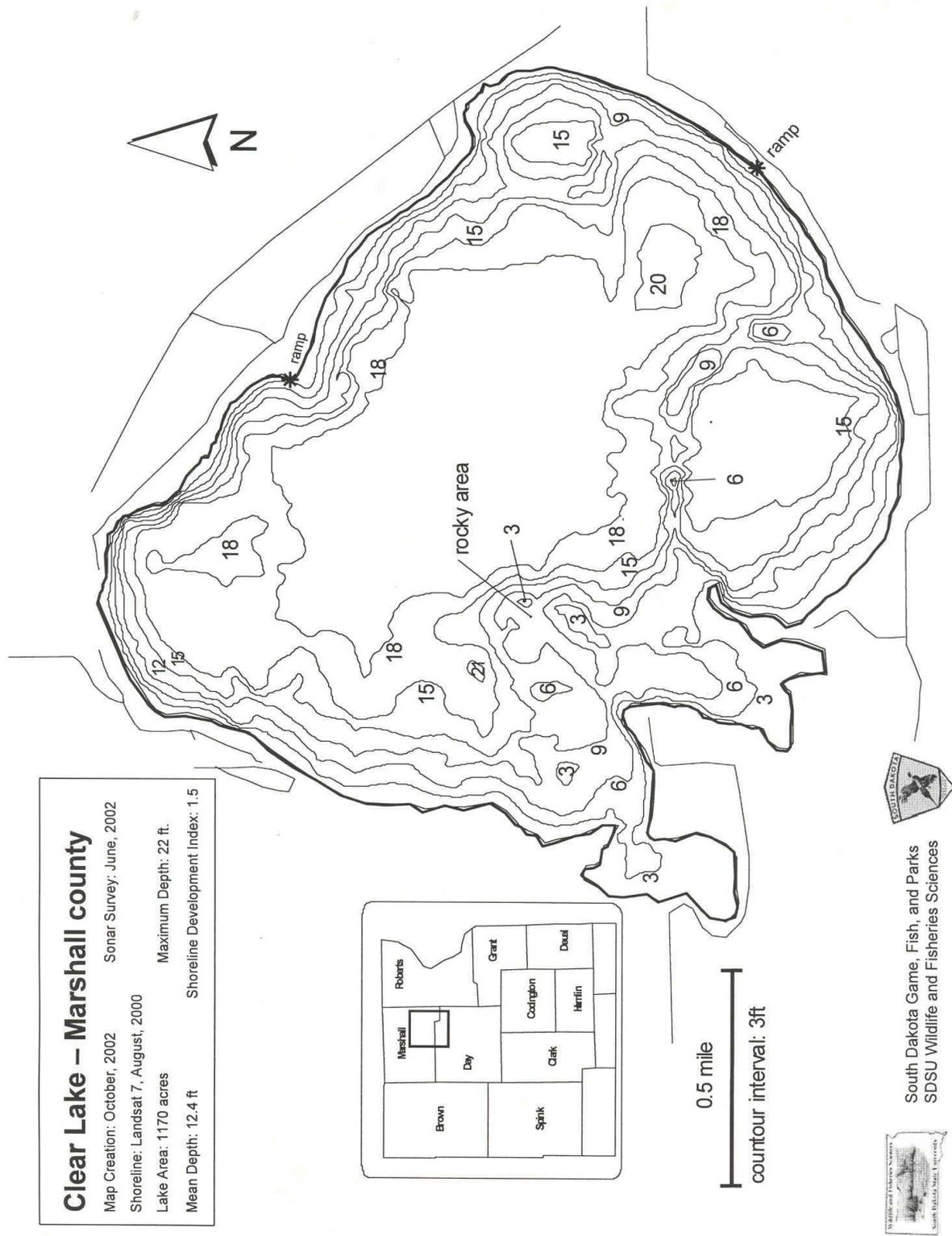


Figure 1. Map depicting depth contours and access sites for Clear Lake, Marshall County, South Dakota.

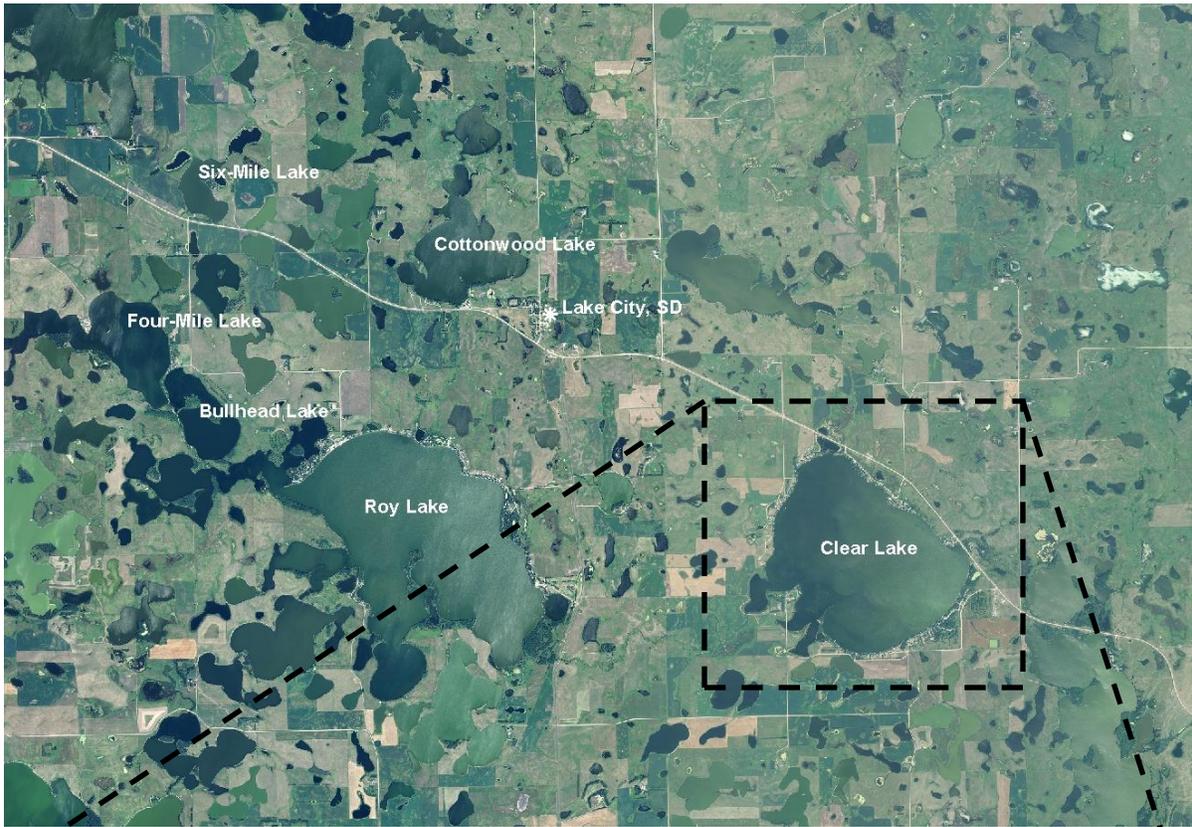


Figure 2. Map depicting geographic locations of Bullhead, Clear, Cottonwood, Four-Mile, Six-Mile, and Roy Lakes from Lake City, Marshall County, South Dakota (top). Also noted is the public access location and standardized net locations for Clear Lake (bottom). CLFN= frame net; CLGN= gill net

## Management Objectives

- 1) Maintain a mean spring night electrofishing CPUE of stock-length Largemouth Bass  $\geq$  30, a PSD of 40-70, and a PSD-P of 10-40.
- 2) Maintain a moderate density Smallmouth Bass population with a PSD of 40-70, and a PSD-P of 10-40.
- 3) Maintain a mean gill net CPUE of stock-length Walleye  $\geq$  10, a PSD of 30-60, and a PSD-P of 5-10.
- 4) Maintain a mean gill net CPUE of stock-length Yellow Perch  $\geq$  30, a PSD of 30-60, and a PSD-P 5-10.
- 5) Maintain a mean frame net CPUE of stock-length Black Bullhead  $\leq$  100.

## Results and Discussion

Clear Lake is a natural lake situated on the Coteau des Prairie. Two major surface water inlets to Clear Lake are located at the north shore and flow directly from the Red Iron Lakes and Long Lake. Water exiting Clear Lake flows into Roy Lake, then through a chain of other Coteau Lakes before eventually emptying into the James River. Currently, Clear Lake is managed as a black bass (Largemouth and Smallmouth bass), Walleye, and Yellow Perch fishery. Black Bullhead, Black Crappie, Bluegill, and Northern Pike also contribute to the fishery.

### *Primary Species*

Largemouth Bass: Largemouth Bass populations are typically assessed using night electrofishing conducted during June when water temperatures are approximately 65°F in northeastern South Dakota. Spring night electrofishing to monitor the Largemouth Bass population is scheduled to be conducted biennially during odd years, with 2013 being the next scheduled sample year.

Smallmouth Bass: Prior to 2009, fall night electrofishing was used to assess Smallmouth Bass populations in NE South Dakota. However, recent research has recommended that Smallmouth Bass population dynamics be monitored utilizing standardized spring (May and June) night electrofishing over suitable habitat (i.e., rocky substrate) in northeastern South Dakota glacial lakes (Bacula 2009). Spring night electrofishing to monitor the Smallmouth Bass population is scheduled to be conducted biennially during odd years, with 2013 being the next scheduled sample year.

Walleye: The mean gill net CPUE of stock-length Walleye was 4.2 (Table 1) and below the minimum objective ( $\geq 10$  stock-length Walleye/net night; Table 3). Since 2003, the mean gill net CPUE has ranged from a low of 2.2 (2004) to a high of 6.8 (2007; 2011; Table 2). Based on the 2012 gill net CPUE, relative abundance is considered moderate.

Gill net captured Walleye ranged in TL from 17 to 62 cm (6.7 to 24.4 in), had a PSD of 32 and a PSD-P of 16 (Table 1; Table 3; Figure 3). The PSD was within the management objective range (30-60); while the PSD-P was above the objective range of 5-10 (Table 3). However, size structure indices should be interpreted with caution as sample size was low (i.e., 28 stock-length Walleye).

Otoliths were collected from a sub-sample of gill net captured Walleye. Age structure information indicated the presence of seven year classes (2001, 2004-2005, 2007, 2009-2011; Table 4). The 2009 cohort coincided with a fry stocking and comprised 54% of Walleye in the gill net catch (Table 4; Table 6). In 2012, the mean fall night electrofishing CPUE of age-0 Walleye was 13.5 (Table 1) and indicated production of a weak year class, which coincided with a fry stocking (Table 1; Table 6). Recruitment of the 2012 cohort is currently unknown and will be assessed in future surveys.

In recent years, weak to moderate walleye year classes have been produced in both stocked (e.g., 2009) and non-stocked (e.g., 2007) years (Table 4; Table 6). Walleye stocked in 2009 and 2011 were marked with Oxytetracycline (OTC) so that the contribution of stocked fish could be evaluated. The estimated stocking contribution for the 2009 and 2011 cohorts was 84% and 66%, respectively (Table 4).

Walleye in Clear Lake tend to exhibit moderate growth and typically attain quality length and the minimum length limit (38 cm; 15 in ) by age 4 (Table 5). Since 2005, the weighted mean length at capture for age-3 Walleye has ranged from 317 to 428 mm (12.5 to 16.9 in); while the weighted mean length at capture for age-4 fish has ranged from 373 to 462 mm (14.7 to 18.2 in; Table 7). However due to low sample sizes, weighted mean TL at capture values may at times represent few walleye (Table 5). The 2009 year class had a weighted mean TL at capture of 348 mm (13.7 in) at age 3 (Table 5). Gill net captured Walleye had mean  $W_r$  values that ranged from 89 to 94 for all length categories (e.g., stock to quality) sampled. The mean  $W_r$  of stock-length Walleye was 90 (Table 1) and no length-related trends in condition were apparent.

Yellow Perch: The mean gill net CPUE of stock-length Yellow Perch was 84.8 (Table 1) and well above the minimum objective ( $\geq 30$  stock-length Yellow Perch/net night). Since 2003, the mean gill net CPUE has ranged from 5.0 (2004) to 122.3 (2011; Table 2). Based on the 2012 gill net catch, relative abundance appears to be high.

Gill net captured Yellow Perch ranged in TL from 9 to 22 cm (3.5 to 8.7 in; Figure 4). The majority of Yellow Perch in the gill net catch were  $\leq$  quality-length (20 cm; 8 in) as indicated by the low PSD and PSD-P values of 14 and 0, respectively (Table 1; Table 3; Figure 4). Both the PSD and PSD-P were below management objectives of 30-60 and 5-10 (Table 3).

In recent years, Yellow Perch in Clear Lake have exhibited consistent recruitment (Table 7). Otoliths collected from a sub-sample of gill net captured yellow perch in 2012 indicated the presence of four consecutive year classes (2008-2011; Table 7). The 2010 cohort was the most represented and comprised 42% of Yellow Perch in the gill net catch; while year classes produced in 2008 and 2009 accounted for an additional 27% and 19% (Table 7).

The weighted mean TL at capture for age-2, age-3, and age-4 male Yellow Perch was 144, 170, and 181 mm (5.7, 6.7, and 7.1 in); while their female counterparts had weighted mean TL at capture values of 148, 184, and 204 mm (5.8, 7.2, and 8.0 in) at age 2, age 3, and age 4, respectively (Table 8). The majority (81%) of gill net captured Yellow Perch were in the stock-quality length category which had a mean Wr of 99.

### *Other Species*

Black Bullhead: The mean frame net CPUE of stock-length Black Bullhead was 7.2 (Table 1) and within the objective ( $\leq 100$  stock-length Black Bullhead/net night; Table 3). Since 2003, the mean frame net CPUE has ranged from a low of 0.6 (2009, 2010) to a high of 21.6 (2003; Table 2). Currently, relative abundance is considered low to moderate in Clear Lake and their impact on the sport fishery is likely minimal.

Black Crappie: The mean frame net CPUE for Black Crappie was 5.2 (Table 1). The 2012 frame net CPUE represented an increase from the 2010 CPUE of 0.3 (Table 2) and indicated moderate relative abundance. Black Crappie ranged in TL from 17 to 24 cm (6.7 to 9.4 in), had a PSD of 80 and a PSD-P of 0. No age or growth information was collected in 2012. Sampled Black Crappie were in good condition with mean Wr values that were  $\geq 105$  for all length categories (e.g., stock to quality) sampled.

Bluegill: The mean frame net CPUE of stock-length Bluegill was 18.6 (Table 1). Since 2003, the frame net mean CPUE has ranged from a low of 2.9 (2004) to a high of 35.6 (2008; Table 2). Based on the 2012 frame net CPUE, relative abundance appears to be moderate.

Frame net captured Bluegill ranged in TL from 8 to 24 cm (3.1 to 9.4 in), had a PSD of 70 and a PSD-P of 10 (Table 1; Table 3; Figure 5). Otoliths were collected from a sub-sample of frame net captured Bluegill and suggested the presence of four year classes (2007, 2009-2011; Table 9). The 2010 cohort was the most represented and comprised 84% of Bluegill in the frame net catch (Table 9).

Bluegills in Clear Lake typically attain quality length (15 cm; 6 in) at age-3 (Table 10). Since 2006, the weighted mean TL at capture of age-3 bluegill has ranged from 156 to 209 mm (6.1 to 8.2 in; Table 10). The condition of sampled Bluegill was high, with Wr values that were  $\geq 114$  for all length categories (e.g., stock to quality) sampled. The mean Wr of stock-length Bluegill was 118 (Table 1) and no length-related trends in condition were apparent. Seasonal influences (i.e., spawning behavior) may have influenced Wr values.

Northern Pike: Northern Pike typically are not sampled effectively during standardized mid-summer fish community surveys. As a result, mean gill net CPUE values are often low. Northern Pike relative abundance in Clear Lake has generally been considered low to moderate with mean gill net CPUE values that have ranged from 0.5 to 5.3 from 2003-2012 (Table 2). The 2012 mean gill net CPUE of stock-length Northern Pike was 3.3 (Table 1). Currently, relative abundance appears to be high.

Northern pike captured in the gill net catch ranged in TL from 38 to 73 cm (15.0 to 28.7 in), had a PSD of 35, and a PSD-P of 10 (Table 1). The condition of gill net captured Northern Pike was similar to that of Northern Pike captured from other northeast South Dakota glacial lakes (e.g., Cattail/Kettle and Roy Lakes) with mean Wr values that ranged from 87 to 92 for all length categories (e.g., stock to quality) sampled. Stock-length Northern Pike had a mean Wr of 88 (Table 1) and no length-related trends in condition were apparent. Condition and size structure indices should be interpreted with caution as sample size was low (i.e., 17 stock-length Northern Pike).

Other: Common Carp and White Sucker were other fish species captured in low numbers during the 2012 survey (Table 1).

## Management Recommendations

- 1) Conduct fish community assessment surveys annually (next survey scheduled in summer 2013) to monitor fish relative abundance, fish population size structures, fish growth, and stocking success.
- 2) Conduct spring night electrofishing on a biennial basis (odd years) to monitor Largemouth Bass and Smallmouth Bass population parameters.
- 3) Conduct fall night electrofishing on an annual basis to monitor age-0 Walleye relative abundance.
- 4) Collect otoliths from Bluegill, Walleye, and Yellow Perch; scales from Largemouth and Smallmouth bass to assess the age structure and growth rates of each population.
- 5) Stock Walleye at ( $\approx$ 500 fry/acre) to establish additional year classes if fall night electrofishing CPUE of age-0 Walleye and gill netting results warrant [i.e., low gill net CPUE of sub-stock (i.e., < 25 cm (10 in) Walleye and/or fall night electrofishing CPUE of age-0 Walleye < 75 fish/hour].
- 6) Maintain the 356-457 mm (14-18 in) protected slot length limit on Largemouth and Smallmouth Bass. The regulation is designed to increase the average size of black bass while allowing harvest of small bass to avoid slowing of growth (Blackwell and Lucchesi 2009).
- 7) Maintain the 381-mm (15 in) minimum length limit on Walleye. The regulation is designed to protect smaller fish from harvest and increase average fish size (Lucchesi and Blackwell 2009).
- 8) Partner with willing landowners on shoreline restoration projects designed to restore native plant fauna along highly-developed shorelines providing improvements to water quality and littoral habitats within the lake.

Table 1. Mean catch rate (CPUE; gill/frame net = catch/net night, electrofishing = catch/hour) of stock-length fish, proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish, and mean relative weight (Wr) of stock-length fish for various fish species captured using frame nets, experimental gill nets, and electrofishing in Clear Lake, 2012. Confidence intervals include 80 percent ( $\pm$  CI-80) or 90 percent ( $\pm$  CI-90). BLB= Black Bullhead; BLC= Black Crappie; BLG= Bluegill; COC= Common Carp; NOP= Northern Pike; SMB= Smallmouth Bass; WAE= Walleye; WHS= White Sucker; YEP= Yellow Perch

Species	Abundance		Stock Density Indices				Condition	
	CPUE	CI-80	PSD	CI-90	PSD-P	CI-90	Wr	CI-90
<i>Frame nets</i>								
BLB	7.2	2.2	38	7	8	4	93	<1
BLC	5.2	2.5	80	7	0	---	109	<1
BLG	18.6	5.0	70	4	10	3	118	<1
COC	0.1	0.1	100	0	100	0	84	21
NOP	1.8	0.5	56	15	25	13	87	1
SMB	3.4	1.8	46	11	15	8	98	1
WAE	0.2	0.1	75	59	0	---	81	5
WHS	0.1	0.1	100	---	100	---	85	---
YEP	10.4	3.9	21	5	0	---	90	<1
<i>Gill nets</i>								
BLB	7.5	3.2	49	13	0	---	104	<1
BLC	14.0	4.8	64	9	0	---	115	<1
BLG	1.0	1.0	33	42	0	---	116	9
NOP	3.3	1.2	35	19	10	12	88	2
SMB	2.0	0.9	33	26	17	20	104	2
WAE	4.2	2.0	32	16	16	13	90	1
WHS	5.2	1.0	97	0	74	0	104	2
YEP	84.8	15.0	14	3	0	---	98	<1
<i>Electrofishing</i>								
WAE <sup>1</sup>	13.5	---	---	---	---	---	---	---

<sup>1</sup> Fall Electrofishing-WAE; catch rate (CPUE) represents age-0 Walleye/hour

Table 2. Historic mean catch rate (CPUE; gill/frame net = catch/net night, electrofishing = catch/hour) of stock-length fish for various fish species captured using frame nets, experimental gill nets and electrofishing in Clear Lake, 2003-2012. BLB= Black Bullhead; BLC= Black Crappie; BLG= Bluegill; COC= Common Carp; GSF= Green Sunfish; LMB= Largemouth Bass; NOP= Northern Pike; SMB= Smallmouth Bass; WAE= Walleye; WHS= White Sucker; YEP= Yellow Perch

Species	CPUE									
	2003	2004	2005	2006 <sup>4</sup>	2007 <sup>4</sup>	2008	2009	2010	2011	2012
<i>Frame nets</i>										
BLB	21.6	13.1	6.7	4.0	7.8	5.2	0.6	0.6	---	7.2
BLC	0.2	0.0	0.3	1.1	3.6	0.8	0.0	0.3	---	5.2
BLG	7.9	2.9	6.9	24.8	19.3	35.6	4.8	13.1	---	18.6
COC	0.1	0.0	0.6	0.1	0.1	0.0	0.0	0.0	---	0.1
GSF	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	---	0.0
NOP	1.2	0.3	0.7	0.7	0.7	0.7	0.4	0.2	---	1.8
SMB	1.3	2.6	1.0	1.9	1.4	2.0	0.8	5.1	---	3.4
WAE	1.2	0.9	0.1	0.7	0.3	0.5	0.2	0.2	---	0.2
WHS	0.3	0.0	0.1	0.1	0.1	0.1	0.5	0.2	---	0.1
YEP	2.1	0.4	2.4	14.6	18.7	1.4	2.5	16.5	---	10.4
<i>Gill nets</i>										
BLB	17.5	15.2	9.2	2.2	6.5	4.8	0.2	0.0	0.2	7.5
BLC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	14.0
BLG	0.3	0.0	0.8	2.2	0.8	1.3	0.0	0.7	0.0	1.0
COC	0.2	0.3	0.2	2.7	2.0	0.3	0.2	0.0	0.2	0.0
NOP	2.5	1.7	0.5	1.5	5.3	2.2	0.7	1.3	2.7	3.3
SMB	2.5	2.3	3.8	2.8	1.2	2.0	4.0	7.8	2.5	2.0
WAE	6.0	2.2	4.8	6.0	6.8	6.2	6.0	4.8	6.8	4.2
WHS	0.8	0.7	0.7	1.2	1.2	1.0	1.8	3.3	3.3	5.2
YEP	30.7	5.0	17.5	39.5	117.2	20.8	15.0	82.8	122.3	84.8
<i>Electrofishing</i>										
LMB <sup>1</sup>	9.2	---	---	---	---	37.6	58.5	---	54.0	---
SMB <sup>2</sup>	---	---	---	---	---	---	89.5	---	83.0	---
WAE <sup>3</sup>	131.6	4.0	117.4	0.0	109.6	0.9	361.8	2.0	340.8	13.5

<sup>1</sup>Spring Electrofishing-LMB

<sup>2</sup>Spring Electrofishing-SMB

<sup>3</sup>Fall Electrofishing-WAE; catch rate (CPUE) represents age-0 Walleye/hour

<sup>4</sup> Monofilament gill net mesh size (0.75", 1.00", 1.25", 1.50", 2.00" and 2.50")

Table 3. Mean catch rate (CPUE; gill/frame net = catch/net night, electrofishing = catch/hour), proportional size distribution for quality- (PSD) and preferred-length (PSD-P) fish, and relative weight (Wr) for selected species captured using frame nets, experimental gill nets, electrofishing in Clear Lake, 2003-2012. BLB= Black Bullhead; BLG= Bluegill; LMB= Largemouth Bass; SMB= Smallmouth Bass; WAE= Walleye; YEP= Yellow Perch

Species	2003	2004	2005	2006 <sup>3</sup>	2007 <sup>3</sup>	2008	2009	2010	2011	2012	Objective
<i>Frame nets</i>											
BLB											
CPUE	22	13	7	4	8	5	1	1	---	7	≤ 100
PSD	97	100	98	57	74	96	100	73	---	38	---
PSD-P	68	98	96	51	33	29	73	55	---	8	---
Wr	93	90	94	85	88	89	102	88	---	93	---
BLG											
CPUE	8	3	7	25	19	36	5	13	---	19	---
PSD	13	51	2	19	41	24	24	11	---	70	---
PSD-P	6	25	2	2	6	8	0	2	---	10	---
Wr	159	143	115	115	110	125	121	111	---	118	---
<i>Gill nets</i>											
WAE											
CPUE	6	2	5	6	7	6	6	5	7	4	≥ 10
PSD	61	85	59	61	41	24	53	72	32	32	30-60
PSD-P	14	31	21	33	15	8	11	14	10	16	5-10
Wr	87	88	88	89	90	89	93	91	88	90	---
YEP											
CPUE	31	5	18	40	117	21	15	83	122	85	≥ 30
PSD	32	67	9	30	15	10	0	0	0	14	30-60
PSD-P	4	17	4	1	1	1	0	0	0	0	5-10
Wr	95	98	96	99	100	98	99	103	98	98	---
<i>Electrofishing</i>											
LMB <sup>1</sup>											
CPUE	9	---	---	---	---	38	59	---	54	---	≥ 10
PSD	91	---	---	---	---	79	95	---	94	---	40-70
PSD-P	82	---	---	---	---	32	36	---	83	---	10-40
Wr	122	---	---	---	---	112	118	---	115	---	---
SMB <sup>2</sup>											
CPUE	---	---	---	---	---	---	90	---	83	---	---
PSD	---	---	---	---	---	---	48	---	55	---	40-70
PSD-P	---	---	---	---	---	---	38	---	41	---	10-40
Wr	---	---	---	---	---	---	102	---	105	---	---

<sup>1</sup> Spring Electrofishing-LMB.

<sup>2</sup> Spring Electrofishing-SMB.

<sup>3</sup> Monofilament gill net mesh size (0.75", 1.00", 1.25", 1.50", 2.00" and 2.50").

Table 4. Year class distribution based on the expanded age/length summary for Walleye sampled in gill nets and associated stocking history (# stocked x 1,000) from Clear Lake, 2008-2012.

Survey Year	Year Class											
	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001
2012 <sup>1</sup>		4	3	15		1		3	1			1
2011	---		1	31	2	4		6	1			
2010 <sup>1</sup>	---	---		11	2	11		9			1	1
2009 <sup>1</sup>	---	---	---			16		15	2			1
2008 <sup>1</sup>	---	---	---	---		1		28	2	2		2
# stocked fry	600	600 <sup>2</sup>		600 <sup>3</sup>				600		1200		1100
sm. fingerling												
lg. fingerling									62			

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

<sup>2</sup> Stocked Walleye were OTC marked; 33 of 50 otoliths collected from fall electrofished age-0 walleye exhibited marks for an estimated stocking contribution of 66%.

<sup>3</sup> Stocked Walleye were OTC marked; 42 of 50 otoliths collected from fall electrofished age-0 walleye exhibited marks for an estimated stocking contribution of 84%.

Table 5. Weighted mean TL at capture (mm) for Walleye age-1 through age-10 sampled in experimental gill nets (expanded sample size) from Clear Lake, 2005-2012. Note: sampling was conducted at approximately the same time during each year allowing comparisons among years to monitor growth trends.

Year	Age									
	1	2	3	4	5	6	7	8	9	10
2012 <sup>1</sup>	194(4)	313(3)	348(15)	---	472(1)	---	561(3)	483(1)	---	---
2011	190(1)	272(31)	428(2)	462(4)	---	514(6)	481(1)	---	---	---
2010 <sup>1</sup>	195(11)	306(2)	383(11)	---	471(9)	---	---	500(1)	615(1)	---
2009 <sup>1</sup>	---	289 (16)	---	409 (15)	460 (2)	---	---	555 (1)	---	---
2008 <sup>1</sup>	168 (1)	---	317 (28)	443 (2)	480 (2)	---	490 (2)	---	---	---
2007	---	257 (29)	378 (7)	438 (4)	---	470 (2)	---	---	590 (3)	608 (4)
2006	182 (5)	277 (10)	360 (6)	373 (1)	478 (5)	458 (2)	---	584 (2)	574 (5)	571 (5)
2005 <sup>1</sup>	191 (13)	279 (9)	---	390 (7)	413 (6)	538 (1)	527 (3)	521 (1)	458 (1)	---

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

Table 6. Stocking history including size and number for fishes stocked into Clear Lake, 2001-2012. WAE= Walleye

Year	Species	Size	Number
2001	WAE	fry	1,100,100
2003	WAE	fry	1,200,000
2004	WAE	large fingerling	62,349
2005	WAE	fry	600,000
2009	WAE	fry	600,000
2011	WAE	fry	600,000
2012	WAE	fry	600,000

Table 7. Year class distribution based on the age/length summary for Yellow Perch sampled in gill nets from Clear Lake, 2009-2012.

Survey Year	Year Class					
	2012	2011	2010	2009	2008	2007
2012		67	243	109	157	
2011	---		419	342	415	
2010	---	---		161	563	24
2009	---	---	---		842	90

Table 8. Weighted mean TL (mm) at capture by gender for Yellow Perch captured in experimental gill nets (expanded sample size) from Clear Lake, 2009-2012.

Year	Age			
	1	2	3	4
2012				
Male	103(27)	144(74)	170(25)	181(46)
Female	102(22)	148(158)	184(95)	204(84)
Combined	102(67)	146(243)	178(109)	193(157)
2011				
Male	96(173)	138(89)	152(149)	---
Female	98(187)	142(258)	173(249)	---
Combined	97(419)	141(342)	164(415)	---
2010				
Male	99(53)	130(107)	---	---
Female	99(77)	142(406)	166(26)	---
Combined	99(161)	138(563)	167(24)	---
2009				
Male	97(268)	134(8)	---	---
Female	96(516)	139(82)	---	---
Combined	96(842)	139(90)	---	---

Table 9. Year class distribution based on the expanded age/length summary for Bluegill sampled in frame nets from Clear Lake, 2007-2012.

Survey Year	Year Class											
	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001
2012		12	282	39		1						
2010	---	---		2	211	15	10	1				
2009	---	---	---		1	58	24					
2008	---	---	---	---		82	387	110	54	7		2
2007	---	---	---	---	---		128	144	76	16		1

Table 10. Weighted mean TL (mm) at capture for Bluegill sampled in frame nets (expanded sample size) from Clear Lake, 2006-2012.

Year	Age							
	1	2	3	4	5	6	7	8
2012	91(12)	156(282)	209(39)	---	244(1)	---	---	---
2010	78(2)	115(211)	164(15)	195(10)	224(1)	---	---	---
2009	71(1)	112(58)	159(24)	---	---	---	---	---
2008	95(82)	127(387)	161(110)	206(54)	234(7)	---	241(2)	---
2007	88(128)	143(144)	182(76)	209(16)	---	236(1)	---	---
2006	113(86)	140(318)	156(30)	---	---	---	---	259(2)

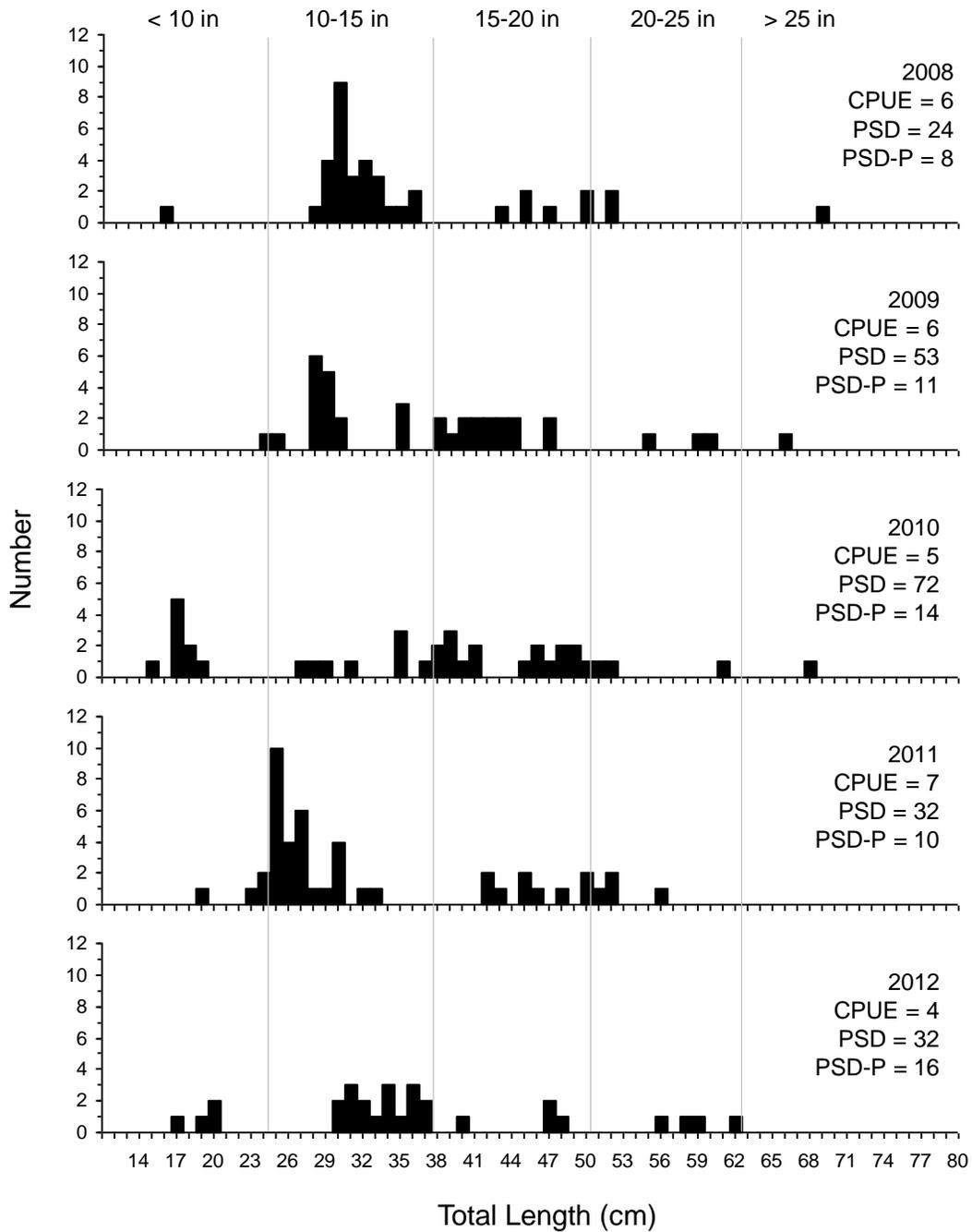


Figure 3. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish for Walleye captured using experimental gill nets in Clear Lake, 2008-2012.

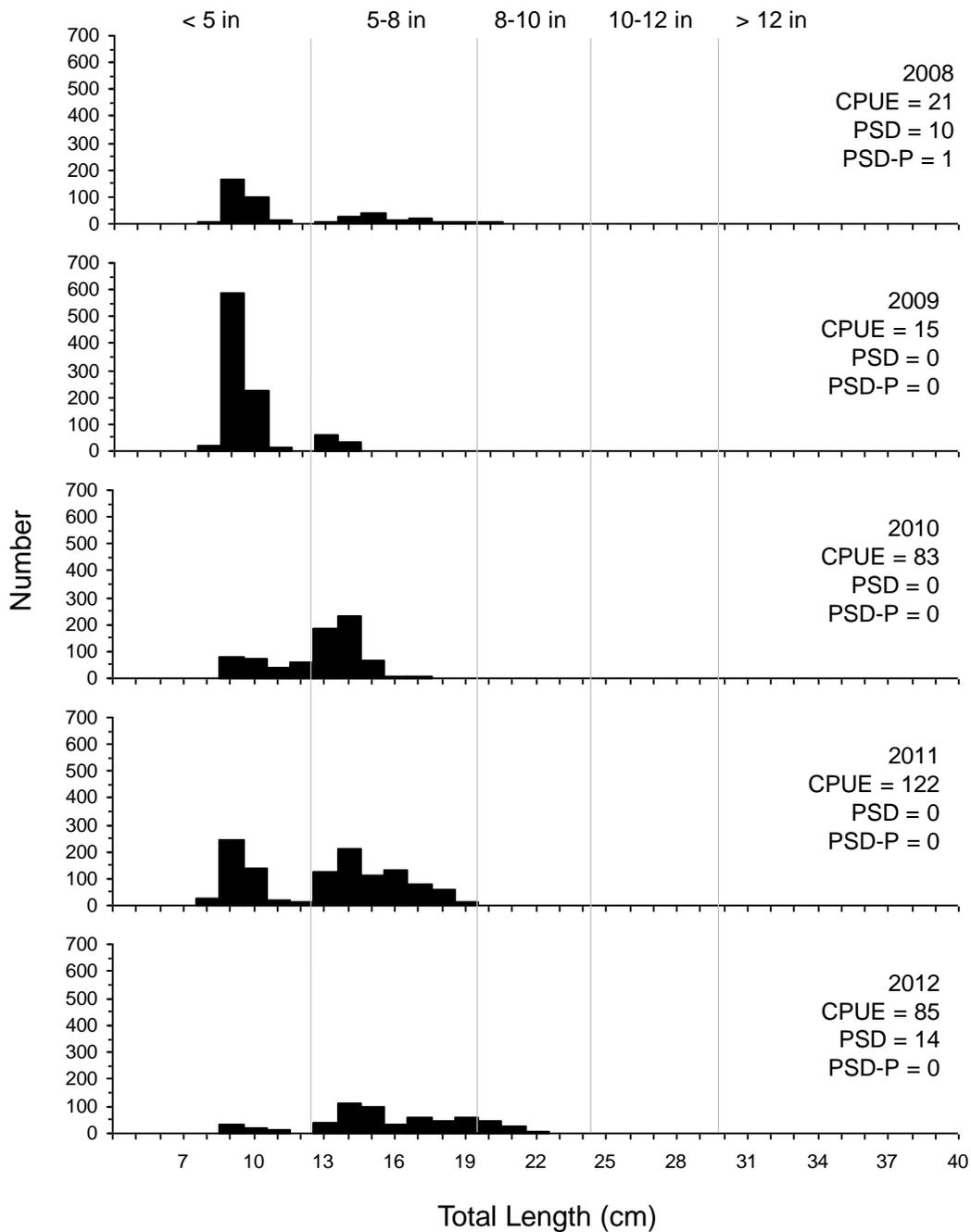


Figure 4. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish for Yellow Perch captured using experimental gill nets in Clear Lake, 2008-2012.

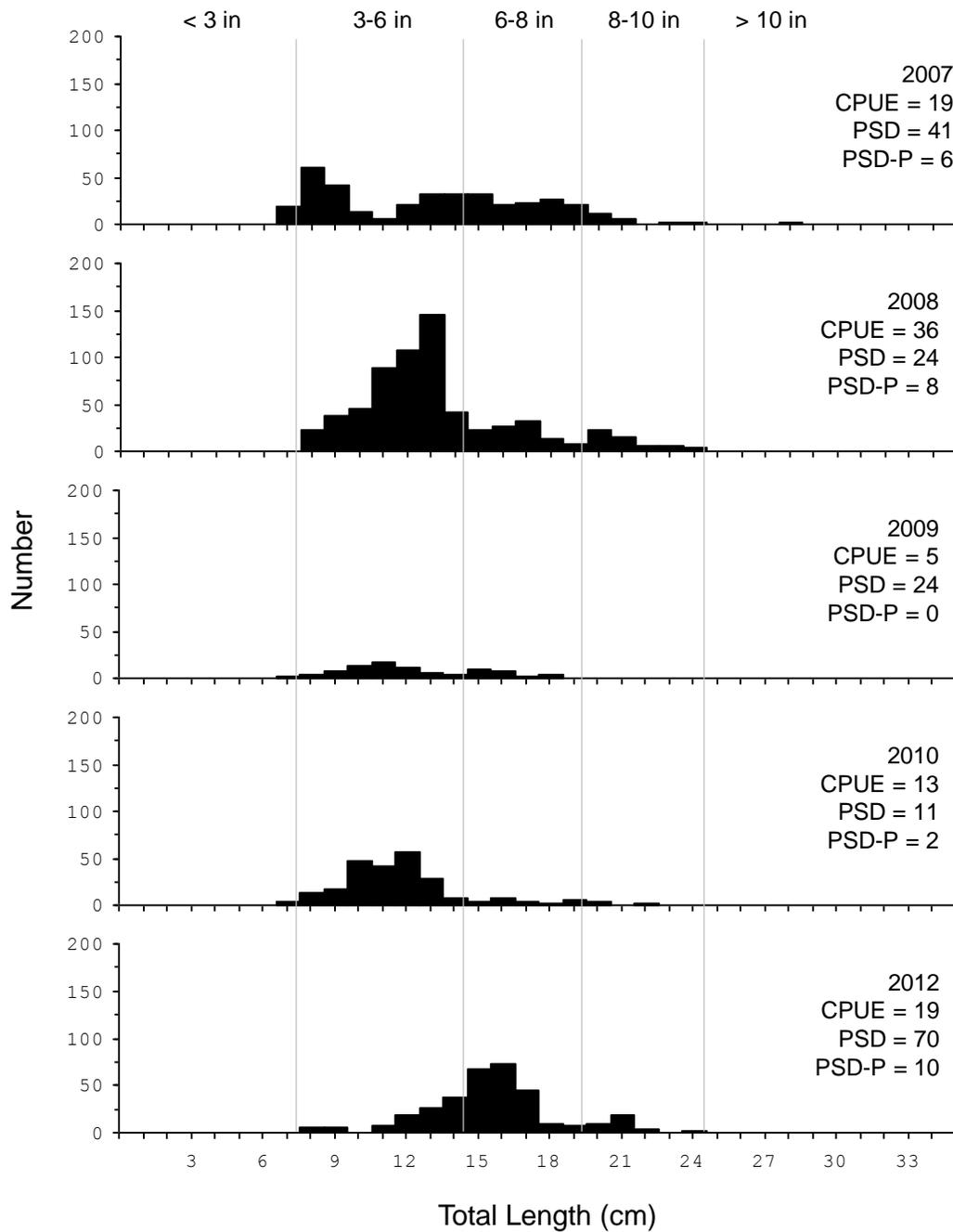


Figure 5. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish for Bluegill captured using frame nets in Clear Lake, 2007-2012.