

# Lake Cochrane

## Site Description

---

### Location

Water designation number (WDN)	23-0005-00
Legal description	T114N-R47W-Sec.4-5,8
County (ies)	Deuel
Location from nearest town	5 1/2 miles south and 2 miles west of Gary, SD

### Survey Dates and Sampling Information

Dates of current survey	June 10-12, 2008 (FN, GN) June 16, 2008 (EF-LMB)
Date of most recent survey	June 5, 2006 (EF-LMB) June 13-16, 2006 (FN, GN)
Gill net sets (n)	4
Frame net sets (n)	18
Spring electrofishing (min)	61

### Morphometry (Figure 1)

Watershed area (acres)	833
Surface area (acres)	355
Maximum depth (ft)	24
Mean depth (ft)	13

### Ownership and Public Access

Lake Cochrane is a meandered lake managed by the SDGFP. A single public boat access site is present on the western shore of Lake Cochrane and is maintained by the SDGFP (Figure 1). The property surrounding Lake Cochrane is owned by the State of South Dakota and private parties.

### Watershed and Land Use

The Lake Cochrane watershed is comprised of a mix of cropland (55%), pasture or grassland (23%), municipal (16%), woodland (5%), and other uses (1%). The Lake Cochrane shoreline is highly developed with lake homes and/or cabins present around nearly the entire shoreline.

### Water Level Observations

The South Dakota Water Management Board established Ordinary High Water Mark is 1684.3 fmsl, and the outlet elevation of Lake Cochrane is 1682.8 fmsl. On April 24, 2008, the elevation of Lake Cochrane was 1682.6 fmsl, slightly below the outlet elevation. By October 8, 2008 water levels on Lake Cochrane had declined to 1682.0 fmsl.

### Aquatic Vegetation and Exotics

Submergent vegetation, primarily chara (a macro-algae) and widgeon grass is fairly extensive throughout the lake. Emergent vegetation, primarily cattail is rare along the shoreline and covers less than 5%. Common carp are the only exotic species that has been reported in Lake Cochrane.

### Fish Management Information

Primary species	black crappie, sunfish (bluegill, green sunfish, bluegill X green sunfish hybrids), largemouth bass, walleye, yellow perch
Other species	black bullhead, johnny darter, common carp, common shiner, fathead minnow, orange-spotted sunfish, pumpkinseed, shorthead redhorse, smallmouth bass, spottail shiner, white sucker
Lake-specific regulations	NE Panfish Management Area: 10 daily; 50 possession. Smallmouth/Largemouth bass daily limit of 3. Only those <12", or 18" and longer may be taken. Of those no more than one may be 18" or longer. Walleye/Saugeye: minimum length 14".
Management classification	warm-water permanent
Fish Consumption Advisories	none

---

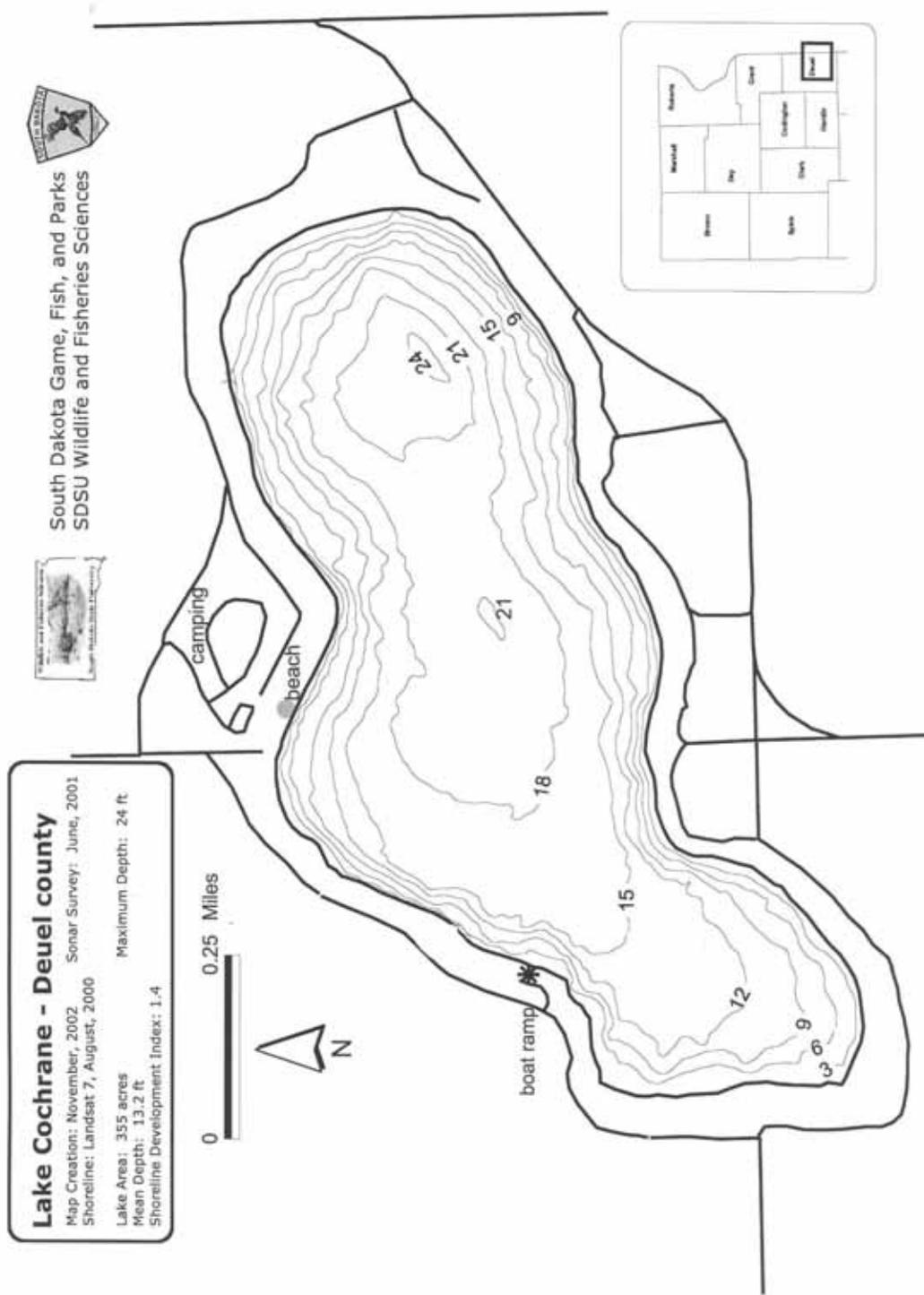


Figure 1. Contour map of Lake Cochrane, Deuel County, South Dakota.

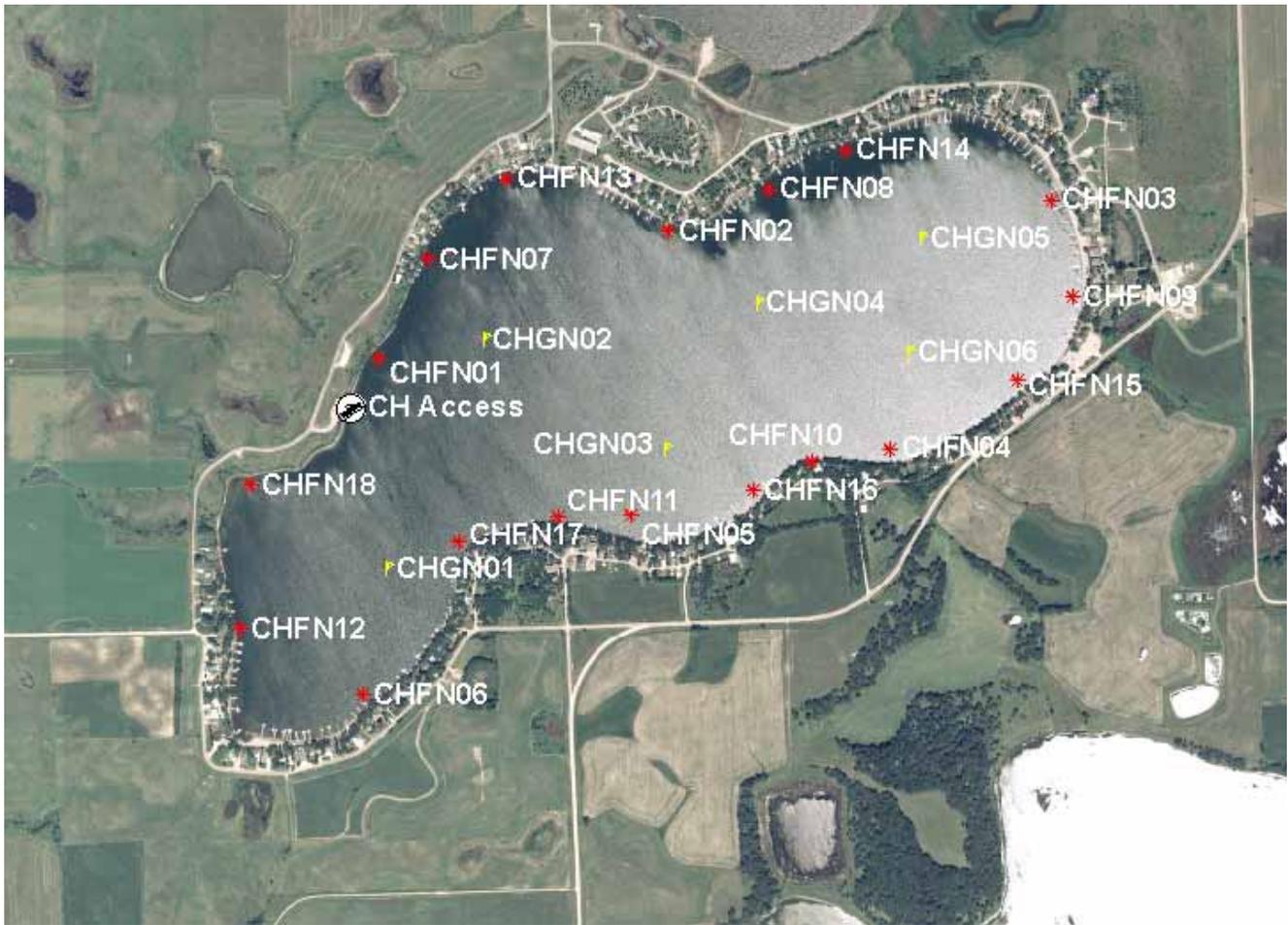


Figure 2. Map depicting access site and standardized net locations for Lake Cochrane, Deuel County, South Dakota. CHFNet= frame net, CHGN= gill net.

## Management Objectives

- 1) Maintain a mean frame net CPUE of stock-length black crappie  $\geq 10$ , a PSD of 30-60, and a PSD-P of 5-10.
- 2) Maintain a mean spring night electrofishing CPUE of stock-length largemouth bass  $\geq 50$ , a PSD of 20-40, and a PSD-P of 0-10.
- 3) Maintain a mean frame net CPUE of stock-length sunfish (*Lepomis* spp.)  $\geq 25$ , a PSD of 30-60, and a PSD-P of 5-10.
- 4) Maintain a mean gill net CPUE of stock-length walleye  $\geq 10$ , a PSD of 30-60, and a PSD-P of 5-10.
- 5) Maintain a mean frame net CPUE of stock-length bullhead  $\leq 100$ .

## Results and Discussion

Lake Cochrane is a relatively small, permanent, natural lake located in the eastern reaches of the Coteau des Prairie. The watershed of Lake Cochrane is relatively small and encompasses approximately 883 acres. Lake Cochrane is one of the more developed lakes in northeastern South Dakota as nearly the entire lake is surrounded by cabins and homes. Lake Cochrane is a popular destination for various recreational activities, and receives high boating and personal watercraft traffic. Lake Cochrane also provides an excellent sport fishery due to the diverse fish species composition. Currently, Lake Cochrane is primarily managed as a black crappie, largemouth bass, sunfish (bluegill, green sunfish, and sunfish hybrids) and walleye fishery. Overall, as many as 13 species of fish contribute to the fishery in Lake Cochrane.

### *Primary Species*

**Black crappie:** The 2008 mean frame net CPUE of stock-length black crappie from Lake Cochrane was 1.3 (Table 1) and below the minimum objective ( $\geq 10$  stock-length black crappie/net; Table 3). In biennial surveys conducted from 2000-2008, the mean frame net CPUE of stock-length black crappie in Lake Cochrane has fluctuated from a low of 1.3 (2008) to high of 8.2 (2004) with the 2000-2008 average being 4.3 (Table 2). Length-frequency analysis of frame net captured black crappies from 2000-2008 suggests relatively-consistent recruitment; however, magnitude appears to be low resulting in relatively-weak year classes and low to moderate relative abundance (Table 2; Figure 3).

Black crappie captured in frame nets during 2008 ranged in total length from 14 to 29 cm (5.5 to 11.4 in; Figure 3). Black crappie in the 2008 frame net catch had PSD and PSD-P values of 43 and 9, respectively, indicating a relatively-balanced black crappie population (defined as PSD = 30-60 and PSD-P = 5-10; Tables 3; Figure 3).

No growth information was available for black crappie in 2008. Black crappie in the 2008 frame net catch from Lake Cochrane had mean  $W_r$  values that ranged from 81 to 100 for all length categories sampled with the mean  $W_r$  of stock-length black crappie being 95 (Table 1). A decreasing trend in mean  $W_r$  values was apparent as black crappie total length increased.

Sunfish: The sunfish population in Lake Cochrane is comprised of bluegill, green sunfish, and bluegill X green sunfish hybrids. Ermer et al. (2005) suggested that false identification is likely occurring during biennial fish population assessments and either more care must be taken during field identification of bluegill and bluegill X green sunfish hybrids, or the sample should be treated as one (i.e., sunfish). Therefore, the bluegill, green sunfish, and bluegill X green sunfish hybrids were pooled together for analysis and completion of this report, and collectively will be referred to as sunfish.

The 2008 mean frame net CPUE of stock-length sunfish was 38.8 (Table 1) and above the minimum objective ( $\geq 25$  stock-length sunfish/net) for Lake Cochrane (Table 3). Sunfish in Lake Cochrane tend to exhibit relatively-strong consistent recruitment resulting in a population with high relative abundance. Since 2000, the mean frame net CPUE of stock-length sunfish in Lake Cochrane has ranged from a low of 38.8 (2008) to a high of 132.7 (2004) with the 2000-2008 average being 65.4 (Table 2).

The total length of sunfish captured in the 2008 frame net catch ranged from 9 to 20 cm (3.5 to 7.9 in) and the sample had a PSD of 79 and a PSD-P of 2 (Figure 5). The 2008 PSD was above the objective range of 30-60 while the PSD-P of 2 was below the objective range of 5-10 (Table 3). Predation from abundant largemouth bass likely plays an important role in the size structure of the sunfish population in Lake Cochrane. Wilson et al. (2000) reported that slight improvements in bluegill size structure from 1994 to 1999 may be a result of increased predation by an increased density of largemouth bass in Lake Cochrane. Kaufman et al. (2008) reported that the high density largemouth bass population in Lake Cochrane appeared to be improving the sunfish size structure as PSD-P values increased from 2000-2006 and exceeded the management objective in 2006 (Table 3; Figure 5). However, fewer preferred-length sunfish were captured in the 2008 frame net catch. The decrease in preferred-length sunfish is likely the result of increased mortality of larger sunfish either natural or by angling (Figure 5).

No growth information was collected for sunfish in Lake Cochrane during 2008; however, Wilson et al. (2000) reported slow growth of bluegill with fish not reaching quality-length (150 mm) until age-7. Growth information should be collected in 2010, as growth rates may have improved, resulting in the increased size structure observed in recent surveys. Sunfish in the 2008 frame net catch from Lake Cochrane had mean  $W_r$  values that ranged from 101-110 for all length categories sampled, with the mean  $W_r$  of stock-length sunfish being 108 (Table 1). Seasonal influences (i.e., spawning behavior) may have impacted mean  $W_r$  values for sunfish in Lake Cochrane.

Largemouth bass: In 2008, the mean spring night electrofishing CPUE of stock-length largemouth bass was 100.0 (Table 1). From 2000-2008, the spring night electrofishing CPUE of stock-length largemouth bass has fluctuated from a low of 94.0 (1999) to a high of 148.0 (2006) with the 2000-2008 average being 100.0 (Table 2).

McKibbin (2002) estimated that there was 3,818 largemouth bass in Lake Cochrane at a CPUE of 109 stock-length largemouth bass/hour in 2000. Largemouth bass abundance is considered high, as the population has exhibited consistently-high natural recruitment in recent years (Table 4; Figure 4).

Largemouth bass captured during spring night electrofishing during 2008 ranged in total length from 20 to 41 cm (8.3 to 16.1 in), had a PSD of 48 and a PSD-P of 5 (Table 1; Figure 4). The 2008 PSD was above the objective range (20-40); while the PSD-P was within the objective range (0-10). Largemouth bass PSD and PSD-P objectives ranges are lower for Lake Cochrane than other waters managed for largemouth bass in region IV. The objective is to maintain a high-density largemouth bass population that will provide positive impacts to the size structure of panfish in Lake Cochrane. It may be necessary to sacrifice some quality (e.g., decreased size structure) in the largemouth bass population to improve the sunfish population through predation. In 2008, approximately 25% of the largemouth bass captured during spring night electrofishing were within the 300 to 457 mm (12 to 18 in) protected-slot length, but no largemouth bass were captured that exceeded the 457-mm (18-inch) upper slot length.

Growth of largemouth bass in Lake Cochrane has been slow when compared to the regional and statewide averages in Willis et al. (2001) with mean back calculated lengths at age being 228 and 267 mm for age-4 and age-5 bass, respectively, in 2008 (Table 4). Largemouth bass typically obtain quality-length at approximately age-5 to age-6 in Lake Cochrane (Table 4). Mean  $W_r$  values of largemouth bass captured during spring night electrofishing in 2008 ranged from 98 to 99 for all length groups sampled with the mean  $W_r$  of stock-length largemouth bass being 99 (Table 1).

Walleye: The mean gill net CPUE of stock-length walleye during 2008 was 4.3 (Table 1) and below the objective range ( $\geq 10$  stock length walleye/net) for Lake Cochrane. Since 2000, walleye relative abundance in Lake Cochrane based on gill net CPUE has ranged from 4.3 (2008) to 16.3 (2000) stock-length walleye/net with the 2000-2008 average being 8.0 (Table 2). The gill net CPUE of stock-length walleye during 2008 indicated moderate relative abundance (4-11 stock-length walleye/net).

Recruitment of naturally produced, fry-stocked, and small fingerling-stocked walleye has been poor which is likely related to predation by and competition from abundant panfish (Ermer et al. 2005). Ermer et al. (2005) suggested that relatively strong year-classes consistently coincide with large fingerling stocks. In 2008, the majority of walleye captured were from the 2005 (age-3) year class which coincided with large fingerling stocking (Table 6; Table 7; Figure 6).

Walleye captured in the 2008 gill net catch from Lake Cochrane ranged in total length from 24 to 52 cm (9.4 to 20.5 in), had a PSD of 18 and a PSD-P of 6 (Table 1; Figure 6). The majority of walleye captured in the 2008 gill net catch were from the 2005 year-class and less than quality-length resulting in the low PSD (Table 7; Figure 6). In 2008, few walleye captured in the gill net catch exceeded the 356-mm (14-inch) minimum length restriction (Figure 6).

Growth rates can be influenced by the length at which large fingerlings are stocked into Lake Cochrane, as the size of stocked fish can vary greatly from year to year. However, walleye growth appears to be relatively slow in Lake Cochrane as

walleye from the 2001 and 2002 year classes had weighted mean total length at capture values of less than 356 mm (14 inches) at age-4 and age-5, respectively (Table 5). In 2008, walleye from the 2005 (age-3) year class had a weighted mean length at capture of 284 mm (Table 5). Mean  $W_r$  values of walleye captured in gill nets during 2008 ranged from the mid to upper 80's for all length categories sampled with the mean  $W_r$  of stock-length walleye being 87 (Table 1). No apparent length-related trends in  $W_r$  values were identified as the majority of walleye sampled were from the 2005 year class.

Yellow Perch: Yellow perch in Lake Cochrane have a long history of slow growth, poor size structure, and relatively high abundance of sub-quality length fish (Ermer et al. 2006); however, relative abundance has decrease substantially since 2000 (Table 2). Poor recruitment in recent years has resulted in low yellow perch relative abundance in Lake Cochrane. The 2008 mean gill net CPUE of stock-length yellow perch was 5.3 (Table 1). Since 2000, the mean gill net CPUE of stock-length yellow perch has fluctuated with a low of 5.3 (2008) and a high of 152.8 (2000) with the 2000-2008 average being 85.1 (Table 2).

Yellow perch in the 2008 gill net catch from Lake Cochrane ranged in total length from 14 to 22 cm (4.7 to 8.7 in), had a PSD of 29 and a PSD-P of 0 (Table 1; Figure 7). Yellow perch in Lake Cochrane tend to be long-lived with relatively slow growth (Kaufman et al. 2008). Mean  $W_r$  values for yellow perch in the 2008 gill net catch were at or near 90 for all length groups sampled with the mean  $W_r$  of stock-length yellow perch being 90 (Table 1).

#### *Other Species*

Black bullhead: The mean frame net CPUE of stock-length black bullhead during 2008 was 6.4 (Table 1) and within the objective ( $\leq 100$  stock-length black bullhead/net) for Lake Cochrane (Table 3). Apparent low recruitment in recent years has resulted in a declining black bullhead population in Lake Cochrane. Since 2000, black bullhead relative abundance has declined in each survey conducted from 2000-2008 (Table 2).

Black bullhead captured in the 2008 frame net catch ranged in total length from 14 to 22 cm (5.5 to 8.7 in), had a PSD of 29 and no preferred-length fish were captured (Table 1; Figure 8). No growth information was collected from black bullheads in Lake Cochrane in 2008. Mean  $W_r$  values for black bullhead in the 2008 frame net catch ranged from 99 to 102 with the mean  $W_r$  of stock-length black bullhead being 99 (Table 1).

Northern Pike: Northern pike typically are not sampled consistently using standard lake survey methods; however, northern pike abundance is believed to be low. In 2008, three northern pike ranging in total length from 73 to 84 cm (28.7 to 33.1 in) were captured in the 2008 gill net catch resulting in a mean gill net CPUE of 0.8 (Table 1). Ermer et al. (2005) suggested that northern pike exhibited poor recruitment likely due to relatively consistent water levels (i.e., no spring rise) limiting available spawning habitat in Lake Cochrane.

## **Management Recommendations**

- 1) Conduct fish population assessment surveys on a biennial basis (next survey scheduled in summer 2010) to monitor fish relative abundance, fish population size structure, fish growth and stocking success.
- 2) Conduct spring night electrofishing on a biennial basis (in conjunction with netting survey) to monitor largemouth bass population parameters.
- 3) Collect otoliths from sunfish (bluegill, green sunfish, and bluegill X green sunfish hybrids), walleye and yellow perch; scales from largemouth bass to assess age structure and growth rates of each population.
- 4) Stock walleye at ( $\approx 25$  large fingerlings/acre) on a biennial basis to establish additional year-classes.
- 5) Evaluate walleye and black bass (largemouth and smallmouth) population dynamics and implement regulations to benefit the population and comply with tool box options.

Table 1. Mean catch rate (CPUE; gill/frame nets= 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 in experimental gill nets, frame nets, and spring night electrofishing in Lake Cochrane, 2008. Confidence intervals include 80 percent ( $\pm$  CI-80) or 90 percent ( $\pm$  CI-90). BLB= black bullhead; BLC= black crappie; LMB= largemouth bass; NOP= northern pike; SUN= sunfish (bluegill, green sunfish, bluegill X green sunfish hybrids); WAE= walleye; YEP= yellow perch

Species	Abundance		Stock Density Indices				Condition	
	CPUE	CI-80	PSD	CI-90	RSD-P	CI-90	Wr	CI-90
<i>Frame nets</i>								
BLB	6.4	2.3	99	1	75	7	99	1
BLC	1.3	0.8	43	19	9	10	95	<1
LMB	0.1	0.0	0	---	0	---	80	---
NOP	0.1	0.0	100	---	0	---	76	---
SUN	38.8	8.5	79	3	2	1	108	<1
WAE	0.2	0.2	0	---	0	---	86	10
YEP	12.5	14.9	19	4	0	1	87	1
<i>Gill nets</i>								
BLB	0.8	0.4	67	33	33	67	105	24
BLC	0.3	0.4	0	---	0	---	104	---
LMB	0.8	0.7	67	33	0	---	91	12
NOP	0.8	0.7	100	0	100	0	96	<1
SUN	1.0	1.2	100	0	75	25	100	15
WAE	4.3	1.0	18	16	6	10	87	3
YEP	5.3	2.5	29	17	0	---	90	2
<i>Electrofishing</i>								
LMB <sup>1</sup>	100.0	45.0	48	8	5	3	99	<1

<sup>1</sup> Spring night electrofishing.

Table 2. Historic mean catch rate (CPUE; gill/frame nets= catch/net night, electrofishing= catch/hour) of stock-length fish for various fish species captured in experimental gill nets, frame nets, and spring night electrofishing in Lake Cochrane, 2000-2008. BLB= black bullhead; BLC= black crappie; LMB= largemouth bass; NOP= northern pike; SHR= shorthead redhorse; SUN= sunfish (bluegill, green sunfish, bluegill X green sunfish hybrids); WAE= walleye; YEP= yellow perch

Species	CPUE									Mean
	2000	2001	2002	2003	2004	2005	2006 <sup>1</sup>	2007	2008	
<i>Frame nets</i>										
BLB	56.8	---	51.5	---	30.1	---	13.8	---	6.4	31.7
BLC	4.7	---	3.9	---	8.2	---	3.6	---	1.3	4.3
LMB	0.2	---	0.0	---	0.3	---	0.2	---	0.1	0.2
NOP	0.2	---	0.0	---	0.1	---	0.0	---	0.1	0.1
SUN	50.5	---	49.8	---	132.7	---	55.1	---	38.8	65.4
WAE	0.6	---	0.3	---	0.7	---	0.2	---	0.2	0.4
YEP	0.0	---	4.9	---	4.9	---	9.7	---	12.5	6.4
<i>Gill nets</i>										
BLB	38.3	---	8.3	---	2.8	---	2.0	---	0.8	10.4
BLC	6.5	---	0.5	---	2.5	---	0.3	---	0.3	2.0
LMB	0.3	---	0.0	---	3.3	---	1.2	---	0.8	1.1
NOP	1.5	---	0.7	---	0.2	---	0.8	---	0.8	0.8
SHR	0.0	---	0.0	---	0.2	---	0.0	---	0.0	0.0
SUN	5.3	---	3.6	---	3.5	---	4.8	---	1.0	3.6
WAE	16.3	---	4.7	---	8.0	---	6.7	---	4.3	8.0
WHS	0.0	---	0.0	---	0.0	---	0.2	---	0.0	0.0
YEP	152.8	---	130.3	---	67.2	---	69.7	---	5.3	85.1
<i>Electrofishing</i>										
LMB <sup>2</sup>	109.0	124.0	---	---	128.4	94.9	148.0	---	100.0	117.4

<sup>1</sup>Monofilament gill net mesh size change (.75", 1", 1.25", 1.5", 2" and 2.5")

<sup>2</sup>Spring night electrofishing.

Table 3. Mean catch rate (CPUE; gill/frame nets= catch/net night, electrofishing= catch/hour), proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish, and relative weight (Wr) for selected species captured in experimental gill nets, frame nets, and electrofishing in Lake Cochrane, 2000-2008. BLB= black bullhead; BLC= black crappie; LMB= largemouth bass; SUN= sunfish (bluegill, green sunfish, bluegill X green sunfish hybrid); WAE= walleye; YEP= yellow perch

Species	2000	2001	2002	2003	2004	2005	2006 <sup>1</sup>	2007	2008	Average	Objective
<i>Frame nets</i>											
BLB											
CPUE	57	---	52	---	30	---	14	---	6	32	≤ 100
PSD	68	---	100	---	100	---	97	---	99	93	---
RSD-P	0	---	28	---	54	---	96	---	75	51	---
Wr	96	---	88	---	89	---	100	---	99	94	---
BLC											
CPUE	5	---	4	---	8	---	4	---	1	4	≥ 10
PSD	57	---	77	---	45	---	51	---	43	55	30-60
RSD-P	0	---	10	---	14	---	11	---	9	9	5-10
Wr	97	---	88	---	95	---	97	---	95	94	---
SUN											
CPUE	51	---	50	---	133	---	55	---	39	66	≥ 25
PSD	74	---	86	---	91	---	77	---	79	81	30-60
RSD-P	0	---	1	---	3	---	11	---	2	3	5-10
Wr	---	---	---	---	---	---	108	---	108	108	---
<i>Gill nets</i>											
WAE											
CPUE	16	---	5	---	8	---	7	---	4	8	≥ 10
PSD	57	---	64	---	13	---	15	---	18	33	30-60
RSD-P	14	---	54	---	10	---	5	---	6	18	5-10
Wr	89	---	87	---	78	---	89	---	87	86	---
YEP											
CPUE	153	---	130	---	67	---	70	---	5	85	≥ 25
PSD	0	---	31	---	51	---	59	---	29	34	30-60
RSD-P	0	---	0	---	0	---	3	---	0	1	5-10
Wr	95	---	92	---	89	---	98	---	90	93	---
<i>Electrofishing</i>											
LMB <sup>2</sup>											
CPUE	109	124	---	---	128	95	148	---	100	117	≥ 50
PSD	42	34	---	---	26	15	17	---	48	30	20-40
RSD-P	8	11	---	---	1	0	1	---	5	4	0-10
Wr	---	---	---	---	85	95	98	---	99	94	---

<sup>1</sup> Monofilament gill net mesh size change (.75", 1", 1.25", 1.5", 2" and 2.5")

<sup>2</sup> Spring night electrofishing.

Table 4. Mean back-calculated length (mm) at age and standard error (SE) for largemouth bass captured during spring night electrofishing in Lake Cochrane, 2008.

Year	Age	N	Age									
			1	2	3	4	5	6	7	8	9	
2005	3	79	97	149	186							
2004	4	37	74	143	192	222						
2003	5	20	71	130	182	218	241					
2002	6	21	81	157	189	248	281	301				
2001	7	23	78	156	193	227	280	310	329			
2000	8	7	67	144	195	230	263	308	333	348		
1999	9	8	65	144	181	224	269	295	323	355	375	
Mean		195	76	146	188	228	267	303	328	351	375	
SE			4	3	2	4	7	3	3	4	0	
<i>Mean Comparison</i> <sup>†</sup>												
			99	183	246	299	332	---	---	---	---	
			89	178	256	316	359	---	---	---	---	
			80	180	266	325	356	---	---	---	---	
			96	182	250	305	342	---	---	---	---	

<sup>†</sup> Willis et al. 2001.

Table 5. Weighted mean length at capture (mm) for walleye captured in experimental gill nets in Lake Cochrane, 2000-2008. Note: sampling was conducted at approximately the same time during each year allowing comparisons among years to monitor growth trends.

Year	N	Age										
		1	2	3	4	5	6	7	8	9	10	
2008 <sup>†</sup>	19	---	---	284	304	255	443	400	---	---	---	
2006 <sup>†</sup>	40	245	---	314	344	351	---	---	---	---	579	
2004	58	219	265	310	---	398	---	594	635	645	---	
2002	35	194	311	354	---	361	---	524	547	596	599	
2000	72		249	271	394	449	497	566				

<sup>†</sup> Age assignments made using otoliths; scales used in previous years.

Table 6. Stocking history including size and number for fishes stocked into Lake Cochrane, 1996-2008.

Year	Species	Size	Number
1996	WAE	large fingerling	7,000
1997	WAE	large fingerling	9,250
2000	WAE	large fingerling	4,110
2002	WAE	large fingerling	4,509
2005	WAE	large fingerling	16,000
2008	WAE	large fingerling	7,068

Table 7. Numbers of walleye sampled (n) using gill nets, by year class, and associated stocking history (Number stocked x 1,000) for walleye captured in Lake Cochrane, 2000-2008.

Survey Year	Year Class												
	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996
2008 <sup>1</sup>				13	1	1	3	1					
2006 <sup>1,2</sup>	---	---		1		1	29	8	1				1
2004	---	---	---	---		3	34	13		3		2	2
2002	---	---	---	---	---	---		7	6	3		1	
2000	---	---	---	---	---	---	---	---			14	19	11
Number stocked													
fry													
small fingerling													
large fingerling	7			16			5		4			9	7

<sup>1</sup> Age assignments made using otoliths; scales used in previous years.

<sup>2</sup> Monofilament gill net mesh size change (.75", 1", 1.25", 1.5", 2" and 2.5")

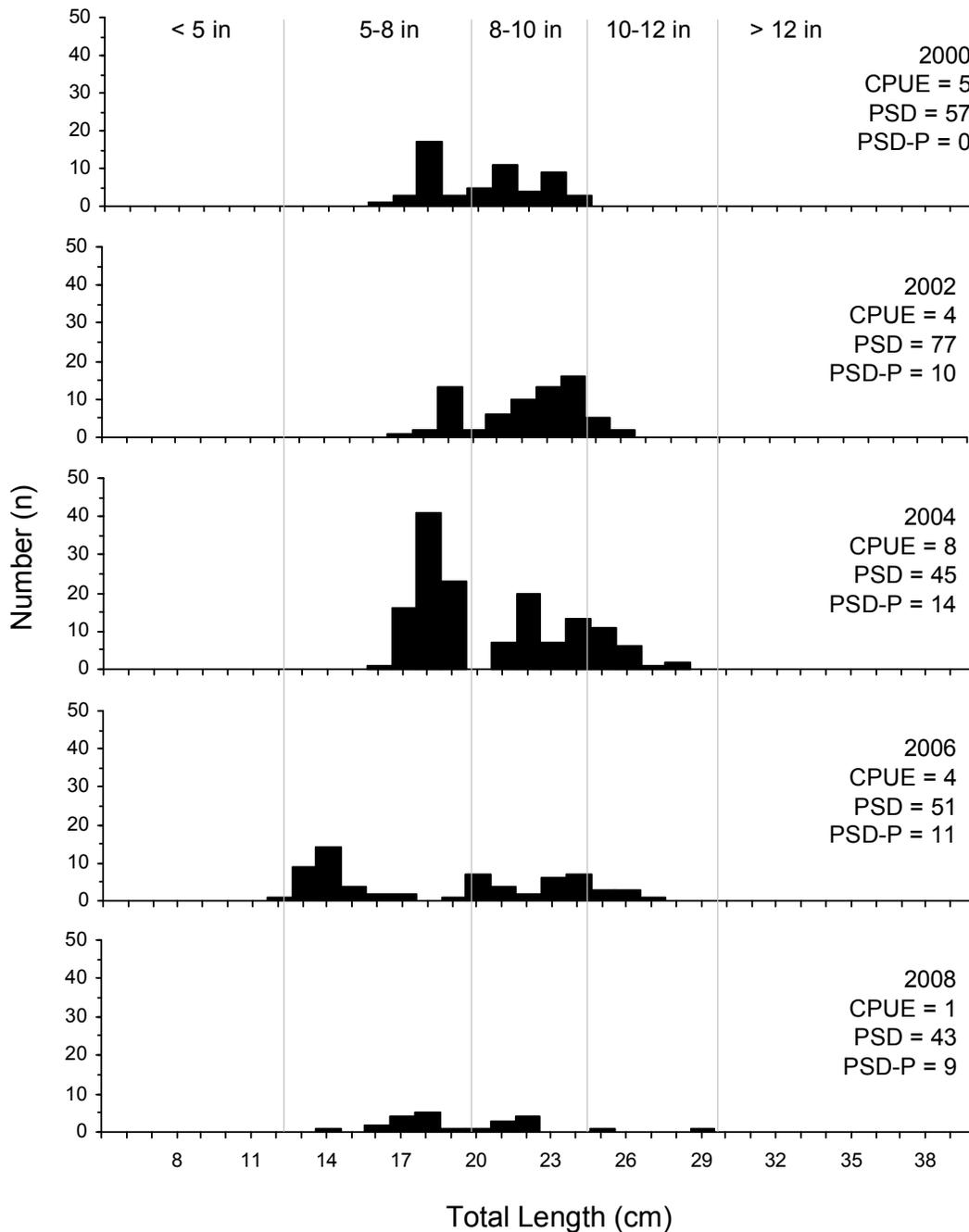


Figure 3. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish for black crappie captured using frame nets in Lake Cochrane, 2000-2008.

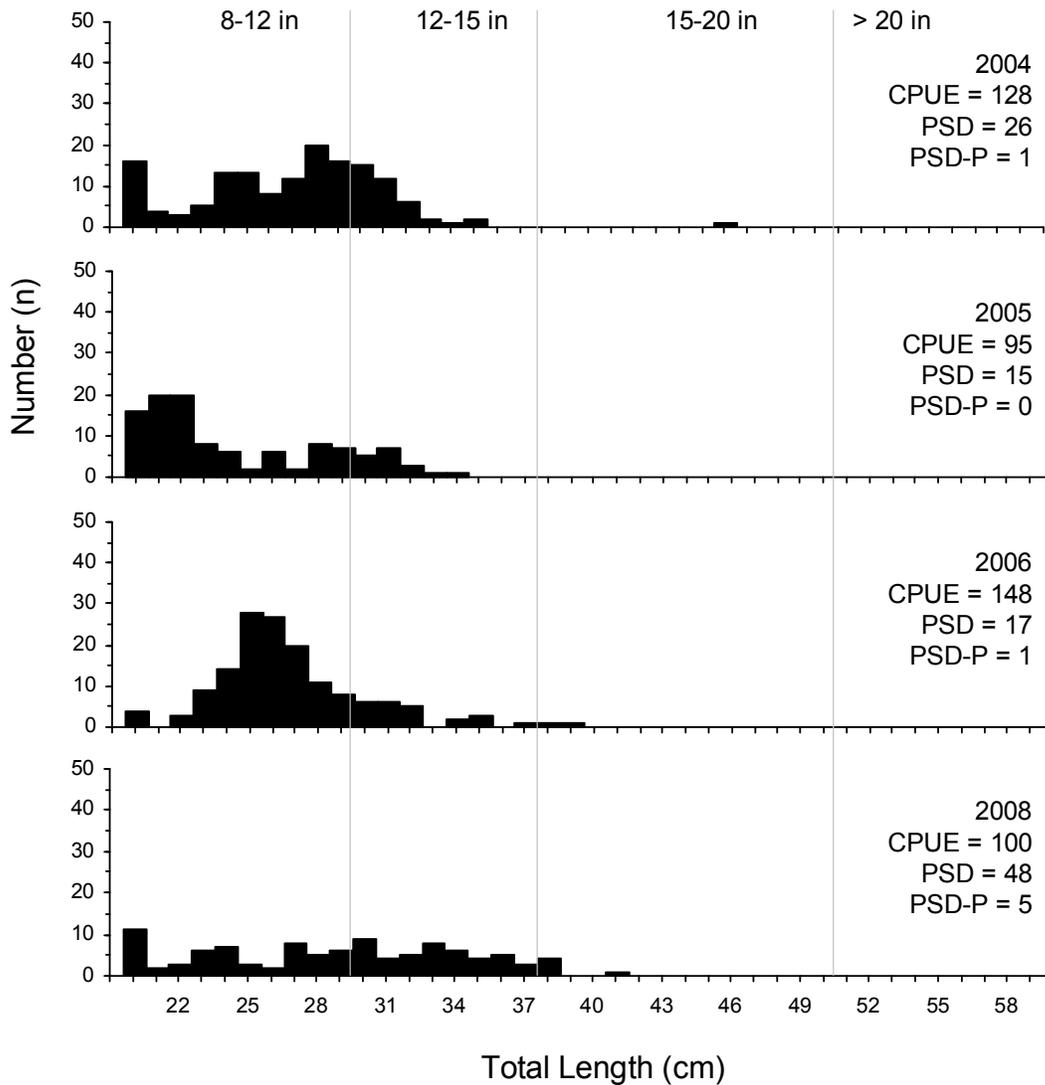


Figure 4. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish for largemouth bass captured during spring night electrofishing in Lake Cochrane, 2001-2008.

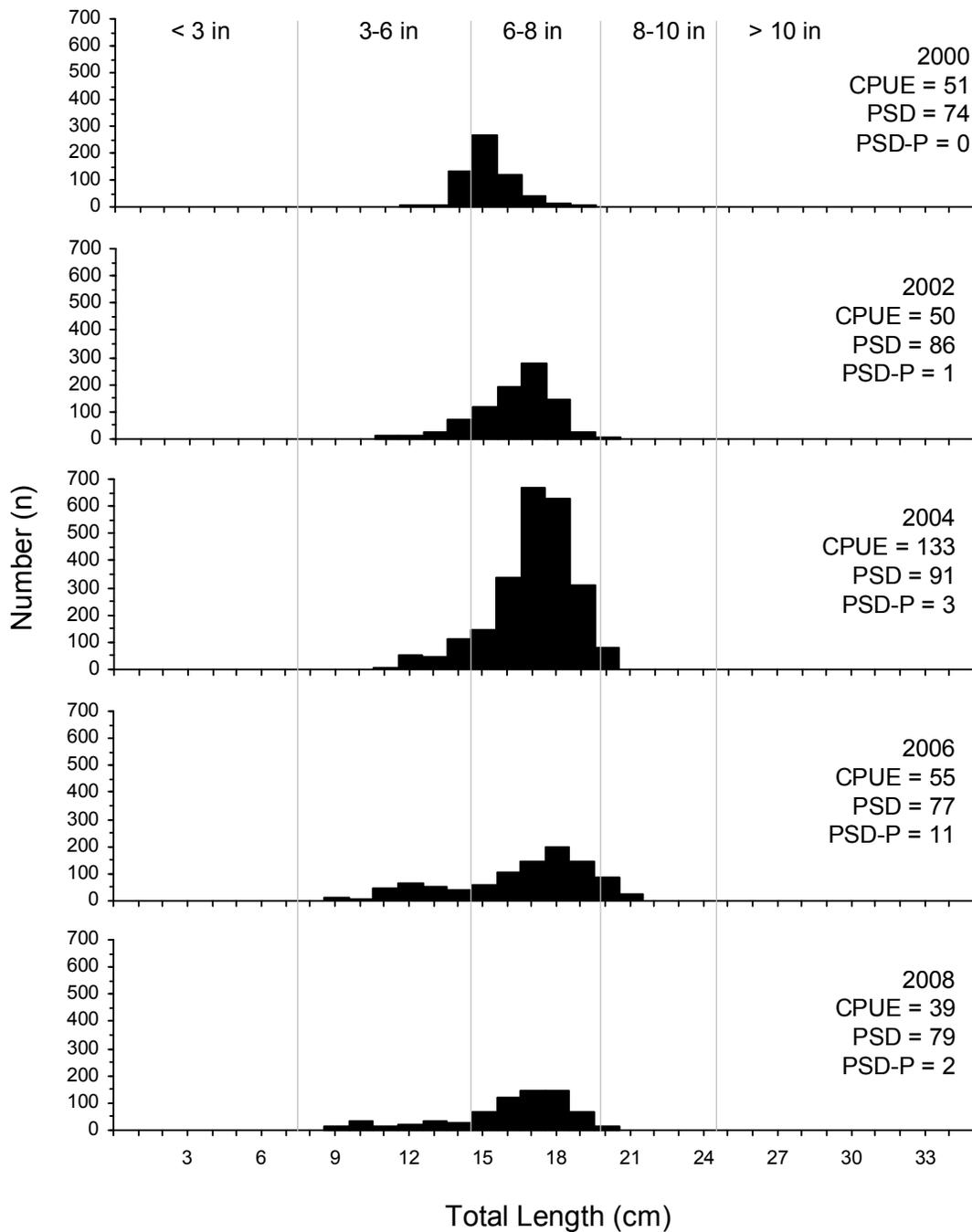


Figure 5. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish sunfish (*Lepomis spp.*) captured using frame nets in Lake Cochrane, 2000-2008.

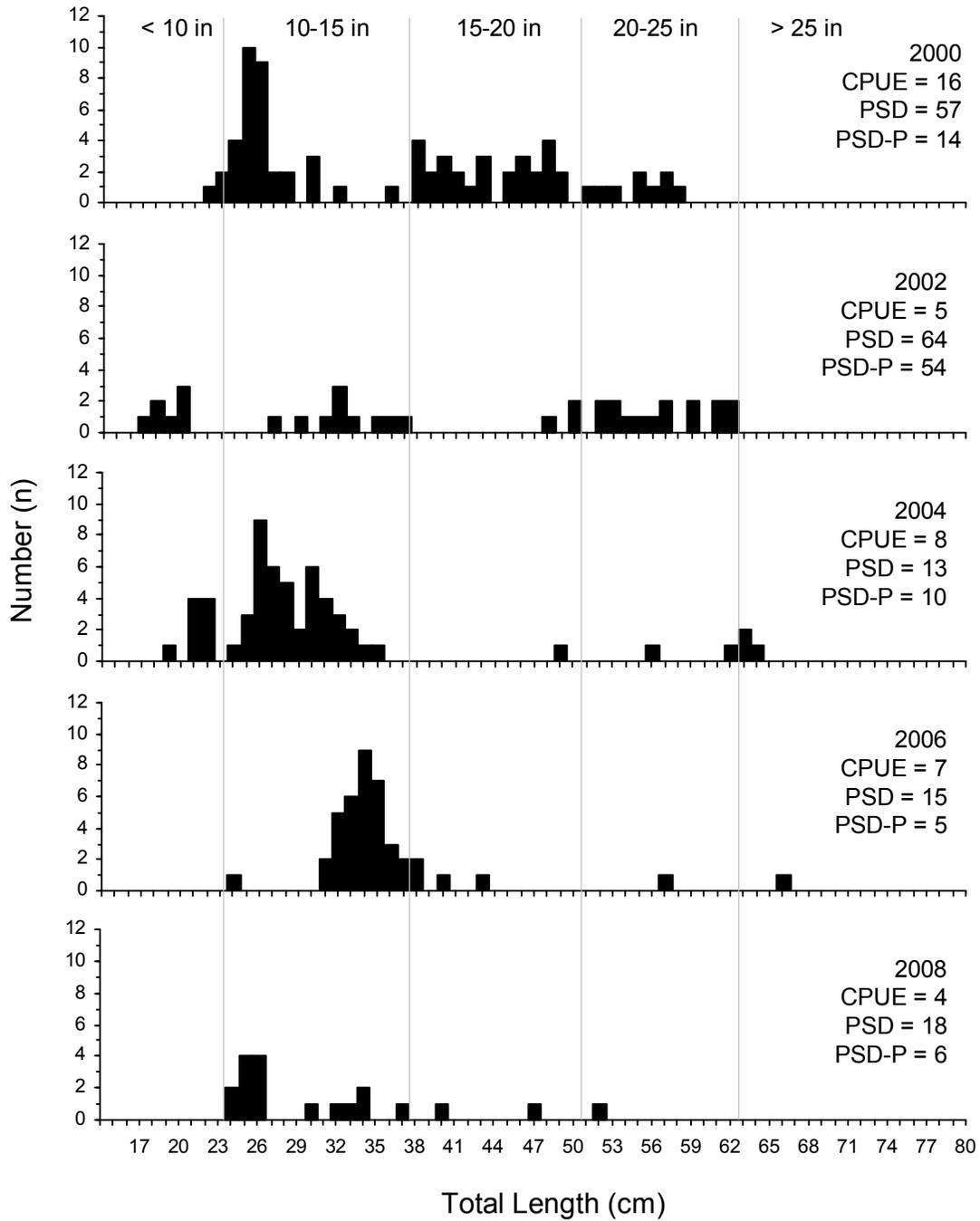


Figure 6. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish walleye captured using gill nets in Lake Cochrane, 2000-2008.

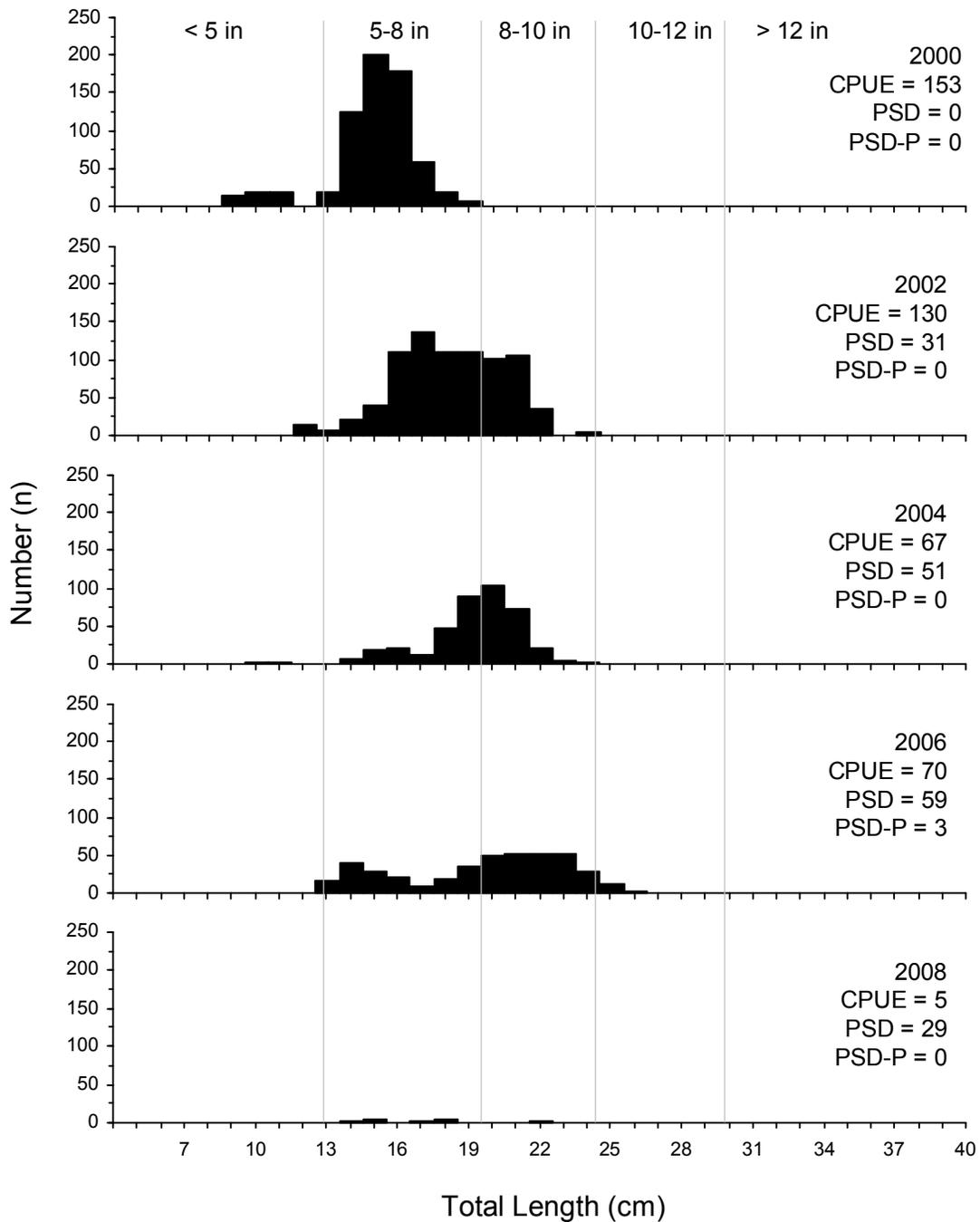


Figure 7. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish yellow perch captured using gill nets in Lake Cochrane, 2000-2008.

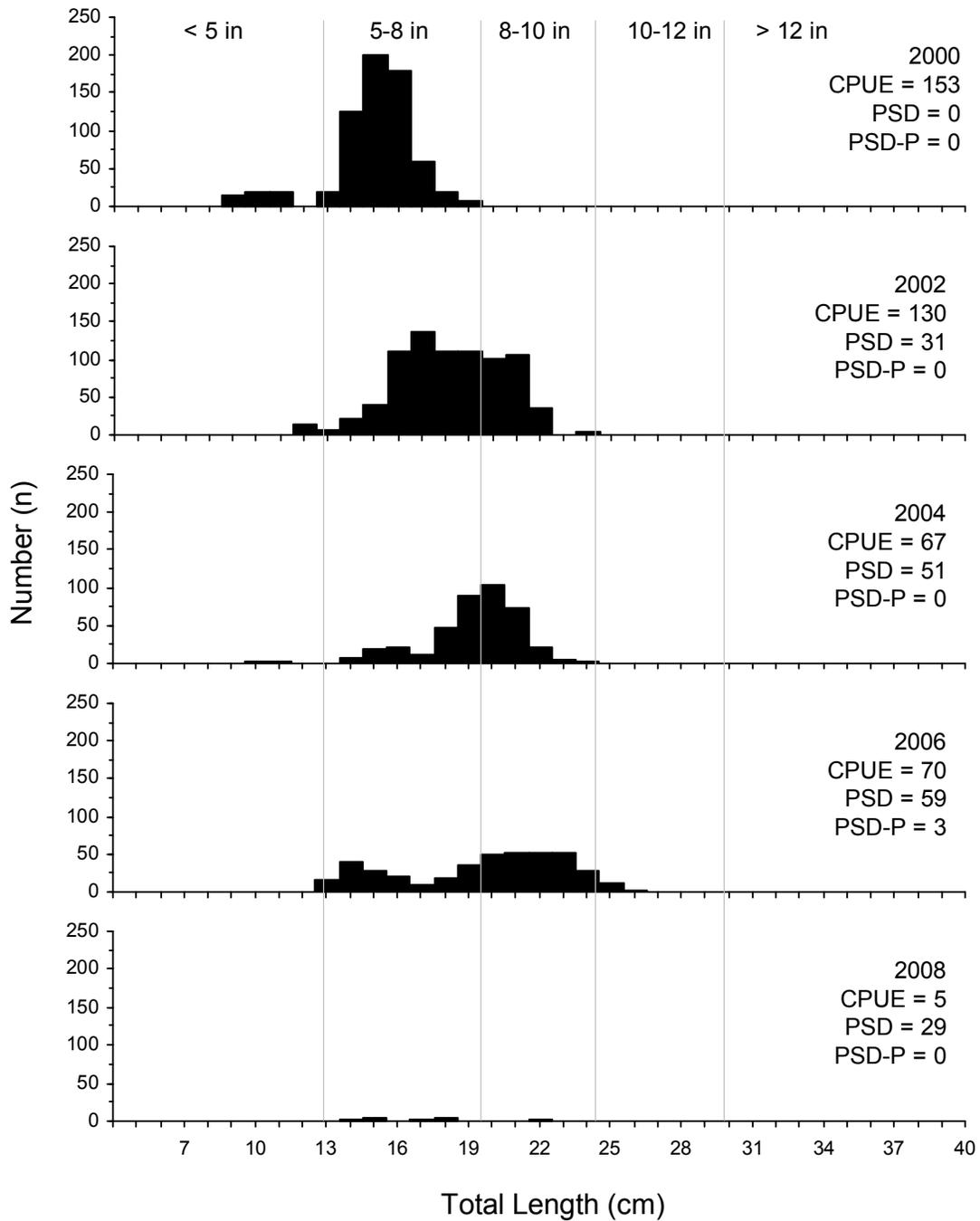


Figure 8. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish black bullhead captured using frame nets in Lake Cochrane, 2000-2008.