

Waubay Lake Site Description

Location

Water designation number (WDN)	22-0031-00
Legal description	T122N-R54 W-Sec. 4-6; T122N-R55W-Sec. 1-5, 7-10, 15-19 T123N-R53W-Sec. 17,20; T123N-R54W-Sec. 7, 18-20, 29-32 T123N-R55W-Sec. 12-14, 23-28, 31-36
County (ies)	Day
Location from nearest town	South and East of Grenville, SD.

Survey Dates and Sampling Information

Survey dates	August 10-13, 2010 (FN, GN) August, 25, 2010 (EF-WAE)
Gill net sets (n)	8
Frame net sets (n)	30
Fall electrofishing-WAE (min)	60

Morphometry

Watershed area (acres)	186,967
Surface area (acres)	≈15,540
Maximum depth (ft)	≈31
Mean depth (ft)	13

Ownership and Public Access

Waubay Lake is a meandered lake managed by the SDGFP. Eight public access sites are present on Waubay Lake (Figure 1). Two (Kanago and Grenville) are maintained by the SDGFP, and six (Buster's, West Bay Ranch, Breske's Bay, Vic's Landing, Wika's Access, and Buckshot) are privately maintained and require a fee or donation for access (Figure 1). Lands adjacent to Waubay Lake are under mixed ownership by the State of South Dakota, private parties, and the U.S. Fish and Wildlife Service (i.e., Waubay National Wildlife Refuge).

Watershed and Land Use

The Waubay Lakes watershed is comprised of a mix of cropland, pasture or grassland, scattered shelterbelts, and small wooded areas.

Water Level Observations

The South Dakota Water Management Board established OHWM on Waubay Lake is 1787.0 and is below the current water elevation. The elevation of Waubay Lake on September 30, 2009 was 1801.4 fmsl and increased to 1803.5 fmsl by May 5, 2010 indicating a substantial "spring rise" (2.1 ft). By October 6, 2010 the elevation had declined to 1803.0 fmsl.

Aquatic Nuisance Species Monitoring

Plant Survey

Small pockets of emergent and submersed vegetation are present in Waubay Lake; however the majority of the shoreline is windswept having little vegetation present. Sago pondweed was the only aquatic plant species identified during the 2010 survey. No aquatic nuisance plant species were encountered.

Macro-Invertebrate/Mussel Survey

No aquatic nuisance macro-invertebrate or mussel species were sampled in 2010.

Fish Community Survey

Common carp were the only aquatic nuisance fish species captured during the 2010 survey (Table 1).

Fish Management Information

Primary species	smallmouth bass, walleye, yellow perch
Other species	black bullhead, black crappie, bluegill, common carp, lake herring, northern pike, rock bass, spottail shiner, white bass, white sucker
Lake-specific regulations	NE Panfish Management Area: 10 daily; 50 possession. Smallmouth/Largemouth bass daily limit of 5. Only those <14", or 18" and longer may be taken. Of those no more than one may be 18" or longer.
Management classification	warm-water semi permanent
Fish Consumption Advisories	none

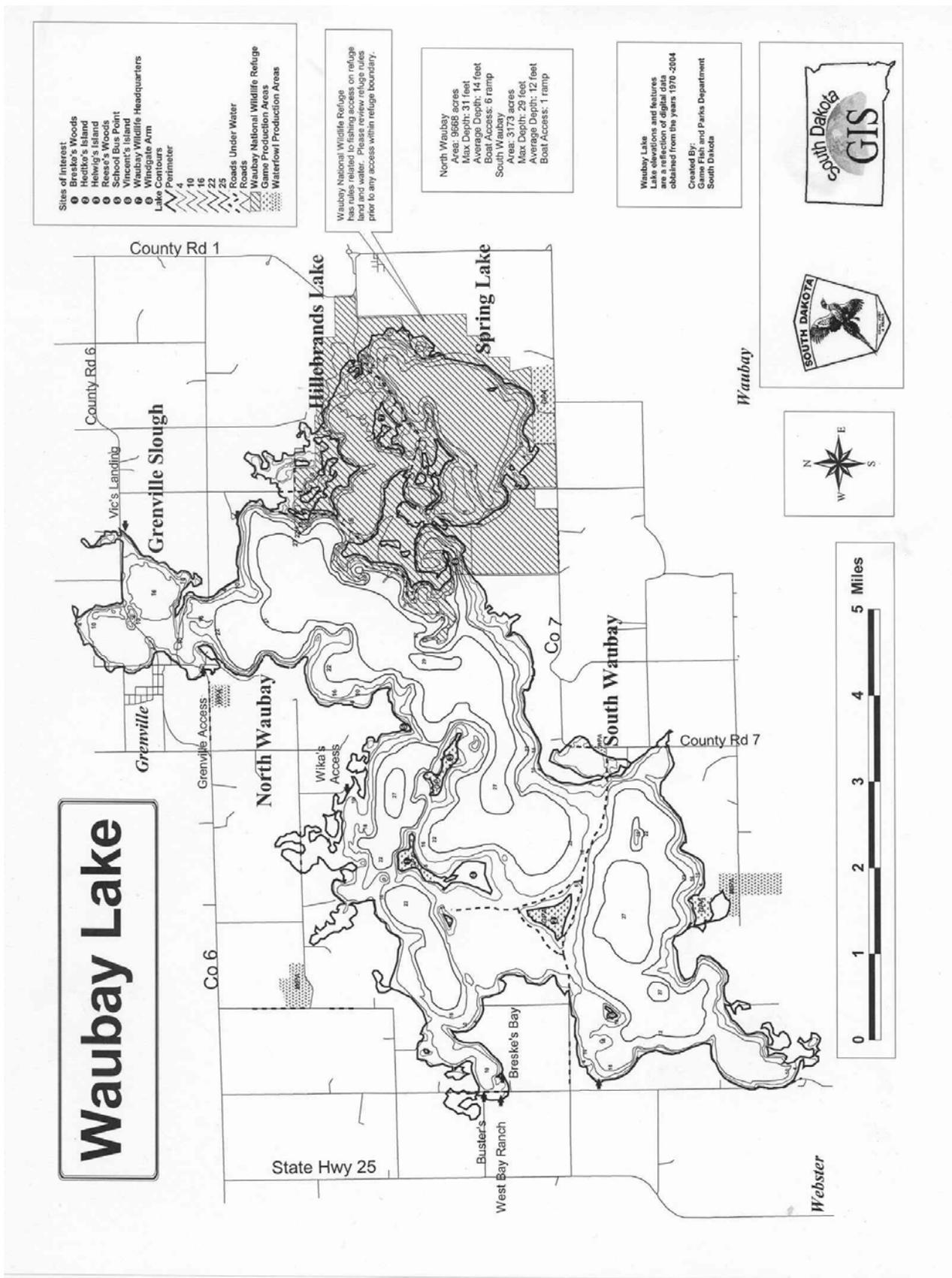


Figure 1. Waubay Lake contour map.

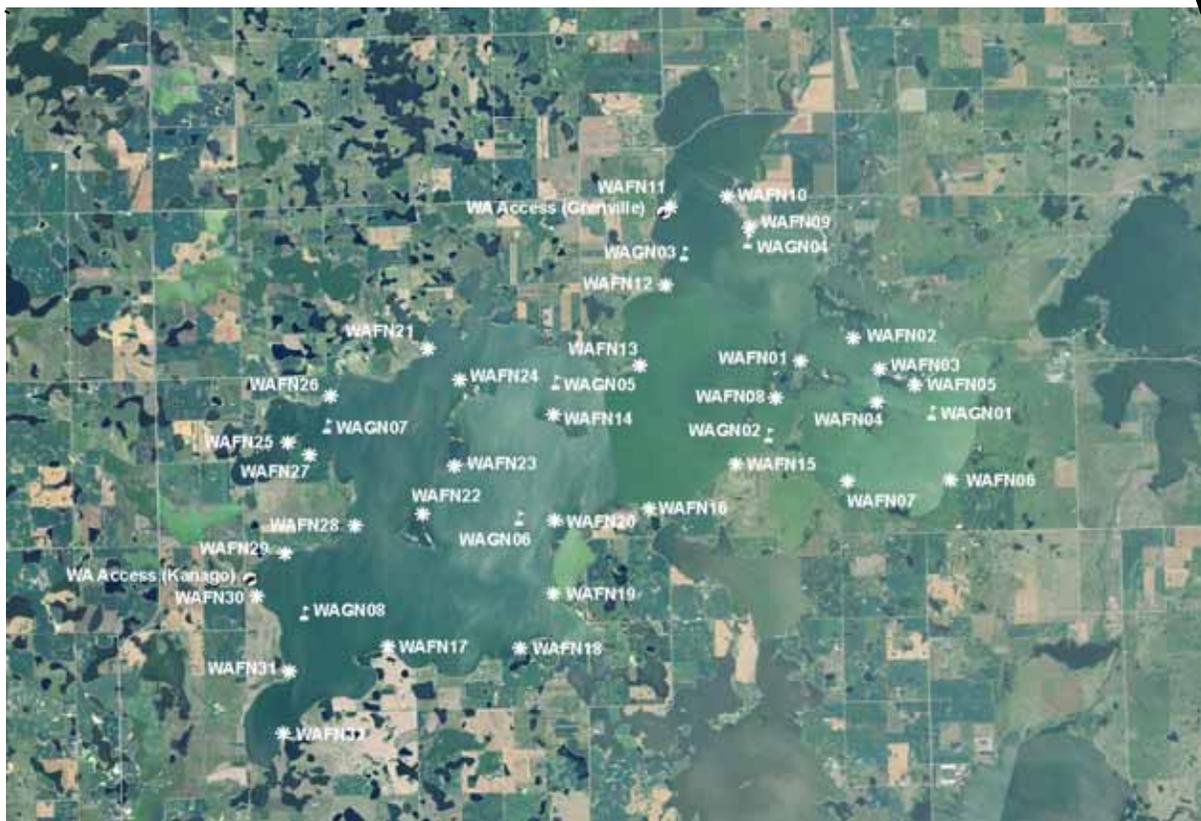


Figure 2. Map depicting geographic location of several Day County, South Dakota lakes including Waubay Lake (top). Also noted are state-owned public access locations and standardized net locations for Waubay Lake (bottom). WAFN= frame nets; WAGN= gill nets

Management Objectives

- 1) Maintain a moderate density smallmouth bass population with a PSD of 40-70, and a PSD-P of 10-40.
- 2) Maintain a mean gill net CPUE of stock-length walleye ≥ 10 , a PSD of 30-60, and a PSD-P of 5-10.
- 3) Maintain a mean gill net CPUE of stock-length yellow perch ≥ 30 , a PSD of 30-60, and a PSD-P of 5-10.
- 4) Maintain a mean frame net CPUE of stock-length bullhead ≤ 100 .

Results and Discussion

Waubay Lake is a meandered lake located in Day County, South Dakota, and is comprised of four previously distinct water bodies (North Waubay, South Waubay, Spring Lake, and Hillebrands). High water conditions since the mid-1990's have connected these four lakes and formed a single waterbody (Waubay Lake). Currently, the surface area of Waubay Lake exceeds 15,000 acres and has a maximum depth of >31 ft. A portion of Waubay Lake is located within the boundaries of the Waubay National Wildlife Refuge (Figure 1). Neither boating nor fishing is allowed within the refuge boundaries during open-water periods; however, fishing is allowed during the winter months.

Currently, Waubay Lake is primarily managed as a smallmouth bass, walleye, and yellow perch fishery; however, northern pike and white bass are important components of the fishery. Overall, as many as 13 fish species have been collected from Waubay Lake (Table 2).

Primary Species

Smallmouth bass: Spring night electrofishing was not conducted on Waubay Lake in 2010. Spring night electrofishing to monitor smallmouth bass population parameters in Waubay Lake will be conducted during odd years (e.g., 2011, 2013, 2015...).

Walleye: The mean gill net CPUE of stock-length walleye during 2010 was 16.0 (Table 1) and above the minimum objective (≥ 10 stock-length walleye/net night; Table 3). Since 2003, the mean gill net CPUE has ranged from a low of 12.4 (2009) to a high of 34.4 (2007), with the 2003-2010 average being 21.1 (Table 2). The 2010 gill net CPUE represented a slight increase from the 12.4 observed in 2009 (Table 2) and indicated high relative abundance.

Walleye captured in the 2010 gill net catch ranged in total length from 15 to 43 cm (5.9 to 16.9 inches), had a PSD of 25 and a PSD-P of 0 (Table 1; Figure 3). The 2010 PSD and PSD-P were below the objective ranges of 30-60 and 5-10 (Table 3) indicating a population comprised of smaller walleye (Figure 3).

Otoliths were collected from a sub-sample of gill net captured walleye in 2010. Five walleye year classes were present (2004, 2005, and 2008-2010) with the 2005 and 2009 cohorts being the most represented (Table 4). In general, the strongest walleye year classes tend to coincide with fry stockings (Table 4). However, based on the 2010 age structure information it appears that natural reproduction may have produced a weak to moderate year class in 2008. One age-0 walleye was captured in the 2010 gill net catch (Table 4) and none were captured during fall night electrofishing (Table 1) indicating limited natural recruitment in 2010.

In 2010, the 2005 (age-5) year class, which has dominated the population in recent years, had a weighted mean total length at capture of 380 mm (15.0 in) similar to weighted mean total length at capture values for age-5 walleye collected since 2005 (Table 5). The 2008 (age-2) and 2009 (age-1) year classes exhibited faster growth when compared to walleyes of the same age collected during previous surveys (2005-2009; Table 5). Increased growth of walleye in Waubay Lake in 2010 can likely be attributed to abundant prey conditions provided by strong natural reproduction of white bass in 2010. White bass from the 2010 (age-0) year class were abundant in the 2010 frame net catch (Table 9; Figure 5) and observed in high numbers during fall night electrofishing. Condition of stock-length walleye in the 2010 gill net catch was good with the mean W_r for all length groups sampled being 88.

Yellow Perch: The 2010 mean gill net CPUE of stock-length yellow perch was 19.8 (Table 1) and below the minimum objective (≥ 30 stock-length perch/net night). Since 2003, the gill net CPUE of stock-length yellow perch has fluctuated from a low of 13.8 (2009) to a high of 58.3 (2004), with the 2003-2010 average being 32.2 (Table 2). The 2010 gill net CPUE was the second lowest observed since 2003 and indicated moderate relative abundance.

Yellow perch captured in the 2010 gill net catch ranged in total length from 12 to 28 cm (4.7 to 11.0 in), had a PSD of 59 and a PSD-P of 22. The 2010 PSD was near the upper end of the objective range of 30-60 and the PSD-P was above the objective range of 5-10 indicating a population comprised of a high proportion of larger (i.e., >20 cm; 8 in) yellow perch (Table 3; Figure 4).

Otoliths were collected from a sub-sample of gill net captured yellow perch in 2010. Age structure information indicated that year classes produced in 2004-2009 comprised the entire sample, with the 2007 and 2009 year classes being the most represented (Table 7).

The weighted mean total length at capture for age-1, age-2, and age-3 male yellow perch was 153, 191, and 218 mm (6.0, 7.5, and 8.6 in), respectively (Table 8). The weighted mean total length at capture for age-1, age-2, and age-3 female yellow perch was 151, 220, and 252 mm (5.9, 8.7, and 9.9 in; Table 8). Stock-length yellow perch in the 2010 gill net catch had mean W_r values that exceeded 100 for all length categories sampled and no length-related trends in condition were apparent. The mean W_r of stock-length yellow perch was 114 (Table 1).

Other Species

Black Bullhead: In 2010 the mean frame net CPUE for black bullhead was 0.8 (Table 1) and within the management objective (≤ 100 stock-length black bullhead/net night; Table 2). Predator densities, coupled with the cyclic nature of black bullhead populations have likely aided in limiting black bullhead recruitment (Table 2). Currently, the black bullhead population in Waubay Lake likely has minimal effect on the overall fishery.

Black crappie: Black crappie abundance in Waubay Lake is low; the mean frame net CPUE of stock-length fish was 0.9 in 2010 (Table 1). Lack of recruitment since 1998 has resulted in low black crappie relative abundance. Until a substantial year-class of black crappies recruit to the population, black crappie will have minimal presence in the overall fishery of Waubay Lake.

Lake Herring: Lake Herring were first captured from Waubay Lake during 2002, and have been sampled in low numbers annually from 2003-2010 (Table 2). In 2010, the mean CPUE of stock-length lake herring in the 2010 gill net catch was 4.3 (Table 1) and the highest recorded from 2003-2010 (Table 2). The lake herring population in Waubay Lake likely originated from lake herring that were hatched at Blue Dog Lake State Fish Hatchery and entered Blue Dog Lake (Blackwell and Hubers 2003).

Northern Pike: Northern pike typically are not sampled effectively using standard lake survey methods; therefore, reported values may not accurately represent the at-large population. Neumann and Willis (1995) reported the most reliable time to sample northern pike with gill nets was late spring following the spawn.

A single northern pike with a total length of 589 mm (23.2 in) and a weight of 1301 g (2.9 lb) was captured in the 2010 gill net catch resulting in a CPUE of 0.1 (Table 1). Northern pike relative abundance has remained low from 2003-2010 with mean gill net CPUE values never exceeding 0.5 (Table 2). Recent high water levels in Waubay Lake should benefit the northern pike population. Northern pike depend heavily on flooded vegetation for spawning and recruitment, and tend to have improved recruitment during springs that have rising water levels in northeastern South Dakota lakes.

White bass: White bass were first sampled in Waubay Lake during 2001 and currently contribute to the fishery. White bass have not been well represented in the gill net catch (Table 2). However, white bass have typically been one of the more abundant species captured in the frame net catch since 2006 (Table 2). In 2010, white bass were the most abundant species in the frame net catch. However, the majority were age-0 and less than stock-length (Table 9; Figure 5). The 2010 mean frame net CPUE of all-sized white bass was 27.7; while the CPUE of stock-length white bass was 3.1 (Table 1).

White bass in the 2010 frame net catch ranged in total length from 10 to 43 cm (3.9 to 16.9 in; Figure 5). The majority of stock-length white bass in the 2010 frame net

catch exceeded quality- and preferred-length resulting in a PSD of 98 and PSD-P of 96 (Table 3; Figure 5).

Otoliths were collected from a sub-sample of frame net captured white bass in 2010. Age structure information indicated the presence of eight year classes (1999, 2001-2002, 2005-2007, and 2009-2010), but most were represented by few individuals (Table 9). Occasional strong year classes tend to dominate the population. In 2010, white bass from the 2005 (6%), 2007 (3%), and 2010 (89%) cohorts comprised 97% of white bass in the frame net catch (Table 9). Although abundant in the frame net catch (Table 9), recruitment of the 2010 year class to the adult population is unknown and will be assessed in future surveys.

The weighted mean total length at capture for age-3 white bass in the 2010 frame net catch was 359 mm (14.1 in) and similar to the 361 mm (14.2 in) observed for age-3 white bass in 2009 (Table 10). Mean W_r values for frame net captured white bass ranged from 96 to 106 for all length categories sampled with the mean W_r of stock-length white bass being 101 (Table 1). No length-related trends in white bass condition were apparent in 2010.

Other: Bluegill, common carp, rock bass, spottail shiner, and white sucker were also captured in low numbers during the 2010 survey (Table 1).

Management Recommendations

- 1) Conduct fish population assessment surveys on an annual basis (next survey scheduled in summer 2011) to monitor fish relative abundance, fish population size structures, fish growth, and stocking success.
- 2) Conduct fall night electrofishing on an annual basis to monitor age-0 walleye relative abundance.
- 3) Stock walleye (≈ 500 fry/acre; 50% OTC marked) to establish additional year-classes if gill netting and/or fall night electrofishing CPUE of age-0 walleye results warrant (i.e., low gill net CPUE of < 250 -mm (10-inch) walleye and/or fall night electrofishing CPUE of age-0 walleye < 75 fish/hour).
- 4) Collect otoliths from walleye and yellow perch, and scales from smallmouth bass to assess age structure and growth rates of each population.
- 5) Conduct spring night electrofishing on a biennial basis (odd years) to monitor the smallmouth bass population.
- 6) Maintain length limit on largemouth and smallmouth bass to benefit population and comply with toolbox options (Blackwell and Lucchesi 2009). Largemouth and smallmouth bass must be less than 14" or longer than 18", but only one 18" or longer can be kept in the daily creel.

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 electrofishing in Waubay Lake, 2010. 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; LAH= lake herring; NOP= northern pike; ROB= rock bass; SMB= smallmouth bass; SPS= spottail shiner; WAE= walleye; WHB= white bass; 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	0.8	0.2	83	13	78	15	92	2
BLC	0.2	0.1	80	20	20	43	109	10
BLG	0.6	0.3	58	20	5	9	120	2
COC	0.5	0.2	71	23	57	24	94	7
NOP	0.4	0.1	91	9	18	22	89	3
ROB	0.9	0.4	54	16	7	9	108	2
SMB	6.3	1.8	30	6	7	4	106	<1
WAE	5.5	1.0	68	6	2	2	87	<1
WHB	3.1	1.2	98	2	96	3	103	2
WHS	0.1	<0.1	100	0	100	0	100	12
YEP	0.2	0.1	0	---	0	---	103	3
<i>Gill nets</i>								
COC	0.8	0.4	83	17	83	17	105	7
LAH	4.3	5.0	100	0	0	---	109	1
NOP	0.1	0.2	100	---	0	---	94	---
ROB	0.3	0.2	50	50	0	---	114	59
SMB	0.1	0.2	0	---	0	---	107	---
SPS ¹	0.1	0.2	---	---	---	---	---	---
WAE	16.0	7.0	25	6	0	---	88	<1
WHB	0.9	0.9	100	0	100	0	101	2
WHS	0.4	0.2	100	0	67	33	98	12
YEP	19.8	4.6	59	7	22	6	114	1
<i>Electrofishing</i>								
WAE ²	0.0	---	---	---	---	---	---	---

¹ All fish sizes

² Fall night electrofishing-WAE; catch rate (CPUE) represents age-0 walleye not stock length

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 electrofishing in Waubay Lake, 2003-2010. BLB= black bullhead; BLC= black crappie; BLG= bluegill; COC= common carp; LAH= lake herring; NOP= northern pike; ROB= rock bass; SMB= smallmouth bass; SPS= spottail shiner; WAE= walleye; WHB= white bass; WHS= white sucker; YEP= yellow perch

Species	CPUE								
	2003	2004	2005	2006 ¹	2007 ¹	2008	2009	2010	Mean
<i>Frame nets</i>									
BLB	8.0	4.6	3.8	3.8	1.7	0.8	0.9	0.8	3.1
BLC	0.9	1.3	0.4	0.2	0.2	0.3	0.1	0.2	0.5
BLG	0.0	0.1	0.0	<0.1	0.2	0.1	0.1	0.6	0.1
COC	1.5	1.3	1.5	0.7	1.1	0.4	0.3	0.5	0.9
NOP	1.6	0.2	0.7	0.2	0.4	0.8	0.7	0.4	0.6
ROB	<0.1	0.0	0.0	0.0	<0.1	0.3	0.7	0.9	0.2
SMB	0.9	1.1	1.3	2.1	6.3	1.9	3.4	6.3	2.9
WAE	17.3	7.8	7.2	9.7	8.3	6.1	5.4	5.5	8.4
WHB	1.3	0.5	1.8	9.1	6.6	3.2	7.1	3.1	4.1
WHS	0.2	0.1	0.2	0.7	0.4	0.1	0.2	0.1	0.3
YEP	0.2	<0.1	0.1	<0.1	<0.1	0.0	0.3	0.2	0.1
<i>Gill nets</i>									
BLB	0.3	0.5	0.1	0.3	0.6	0.0	0.1	0.0	0.2
COC	0.1	0.9	0.1	1.9	1.5	0.6	0.0	0.8	0.7
LAH	0.1	0.5	1.1	2.3	1.9	0.6	1.5	4.3	1.5
NOP	0.3	0.3	0.1	0.1	0.0	0.0	0.1	0.1	0.1
ROB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
SMB	0.0	0.0	0.0	0.0	0.4	0.9	0.1	0.1	0.2
SPS ²	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
WAE	30.5	15.5	18.1	13.5	34.3	28.8	12.4	16.0	21.1
WHB	0.0	0.0	0.0	0.3	2.0	4.6	0.3	0.9	1.0
WHS	0.1	0.0	0.4	0.0	0.3	0.1	0.0	0.4	0.2
YEP	32.4	58.3	30.4	27.6	42.8	32.4	13.8	19.8	32.2
<i>Electrofishing</i>									
SMB ³	---	---	---	---	---	---	40.4	---	40.4
WAE ⁴	30.7	114.3	148.4	2.0	0.0	5.0	88.0	0.0	48.6

¹ Monofilament gill net mesh size change (0.75", 1.00", 1.25", 1.50", 2.00" and 2.50")

² All fish sizes

³ Spring night electrofishing-SMB

⁴ Fall night electrofishing-WAE; catch rate (CPUE) represents age-0 walleye not stock length

Table 3. Mean catch rate (CPUE; gill/frame nets= catch/net night, electrofishing= catch/hour), proportional stock density 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 Waubay Lake, 2003-2010. BLB= black bullhead; SMB= smallmouth bass; WAE= walleye; YEP= yellow perch

Species	2003	2004	2005	2006 ¹	2007 ¹	2008	2009	2010	Average	Objective
<i>Frame nets</i>										
BLB										
CPUE	8	5	4	4	2	1	1	1	3	≤ 100
PSD	88	100	100	96	98	96	100	83	95	---
PSD-P	61	84	89	90	87	96	100	78	86	---
Wr	90	87	85	83	86	86	96	92	88	---
<i>Gill nets</i>										
WAE										
CPUE	31	16	18	14	34	29	12	16	21	≥ 10
PSD	23	29	26	29	7	12	16	25	21	30-60
PSD-P	3	6	3	1	0	1	3	0	2	5-10
Wr	80	78	86	81	88	85	90	88	85	---
YEP										
CPUE	32	58	30	28	43	32	14	20	32	≥ 30
PSD	96	97	88	86	79	61	75	59	80	30-60
PSD-P	45	47	46	43	32	33	20	22	36	5-10
Wr	107	112	113	116	121	114	116	114	114	---
<i>Electrofishing</i>										
SMB ²										
CPUE	---	---	---	---	---	---	40	---	40	---
PSD	---	---	---	---	---	---	57	---	57	40-70
PSD-P	---	---	---	---	---	---	27	---	27	10-20
Wr	---	---	---	---	---	---	102	---	102	---

¹ Monofilament gill net mesh size change (0.75", 1.00", 1.25", 1.50", 2.00" and 2.50").

² Spring night electrofishing-SMB

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 10,000) from Waubay Lake, 2006-2010.

Survey Year	Year Class													
	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997
2010	1	47	24			55	3							
2009	---	4	6	6		77	6		2	2		3		2
2008	---	---		2	1	188	10	13		5	3	11		
2007 ¹	---	---	---		5	190	25	34			1	20	1	
2006 ^{1,2}	---	---	---	---		72	26	20		4		54		
# stocked														
fry		400				600	870	900	850			1345		
sm. fingerling								49						
lg. fingerling														

¹ Monofilament gill net mesh size (0.75", 1.00", 1.25", 1.50", 2.00" and 2.50")

² Older walleye were sampled, but are not reported in this table

Table 5. Weighted mean total length (mm) at capture for walleye age-0 through age-10 sampled in experimental gill nets (expanded sample size) from Waubay Lake, 2005-2010. 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
2010	151(1)	270(47)	347(24)	---	---	380(55)	394(3)	---	---	---	---
2009 ¹	120(4)	239(6)	315(6)	---	349(77)	377(6)	---	368(2)	492(2)	---	422(3)
2008	---	214(2)	267(1)	314(188)	377(10)	383(13)	---	407(5)	405(3)	425(11)	---
2007	---	246(5)	280(190)	332(25)	354(34)	---	---	437(1)	412(20)	657(1)	---
2006 ¹	---	223(72)	289(26)	332(20)	---	381(4)	---	385(54)	---	---	---
2005	125(15)	229(14)	295(31)	321(4)	344(4)	349(1)	371(98)	---	---	626(3)	697(1)

¹ Older walleye were sampled, but are not reported in this table.

Table 6. Stocking history including size and number for fishes stocked into Waubay Lake, 1997-2010. SMB= smallmouth bass; WAE= walleye

Year	Species	Size	Number
1999	SMB	fingerling	23,900
1999	WAE	fry	13,449,000
2000	SMB	fingerling	25,540
2001	SMB	fingerling	26,900
2002	WAE	fry	8,500,000
2003	WAE	fry	9,000,000
2003	WAE	small fingerling	496,655
2004	WAE	fry	8,700,000
2005	WAE	fry	6,000,000
2009	WAE	fry	4,000,000

Table 7. Year class distribution based on the age/length summary for yellow perch sampled in gill nets from Waubay Lake, 2009-2010.

Survey Year	Year Class											
	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999
2010	---	60	31	61	7	---	3	---	---	---	---	---
2009 ¹	---	---	2	75	14	2	5	1	---	4	2	2

¹ Older yellow perch were sampled, but are not reported in this table

Table 8. Weighted mean total length (mm) at capture by gender for yellow perch captured in experimental gill nets (expanded sample size) from Waubay Lake, 2009-2010.

Year	Age									
	1	2	3	4	5	6	7	8	9	10
2010										
Male	153(17)	191(4)	218(10)	---	---	---	---	---	---	---
Female	151(43)	220(28)	252(48)	251(7)	---	280(3)	---	---	---	---
Combined	151(60)	216(31)	245(61)	251(7)		280(3)	---	---	---	---
2009 ¹										
Male	136(1)	198(15)	233(2)	---	239(2)	---	---	268(1)	235(1)	---
Female	157(1)	206(61)	254(11)	261(2)	286(3)	255(1)	---	298(3)	298(1)	299(2)
Combined	147(2)	204(75)	249(14)	261(2)	267(5)	255(1)	---	291(4)	267(2)	299(2)

¹ Older yellow perch were sampled, but are not reported in this table

Table 9. Year class distribution based on the expanded age/length summary for white bass sampled in frame nets from Waubay Lake, 2009-2010.

Survey Year	Year Class											
	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999
2010	738	4		21	4	50			6	7		3
2009	---		1	50	28	123			3	19	3	

Table 10. Weighted mean total length (mm) at capture for white bass age-0 through age-9 sampled in frame nets (expanded sample size) from Waubay Lake, 2009-2010.

Year	Age									
	0	1	2	3	4	5	6	7	8	9
2010 ¹	121(738)	230(4)	---	359(21)	361(4)	395(50)	---	---	428(6)	418(7)
2009	---	203(1)	304(50)	361(28)	374(123)	---	---	424(3)	401(19)	425(3)

¹ Older white bass were sampled, but are not reported in this table

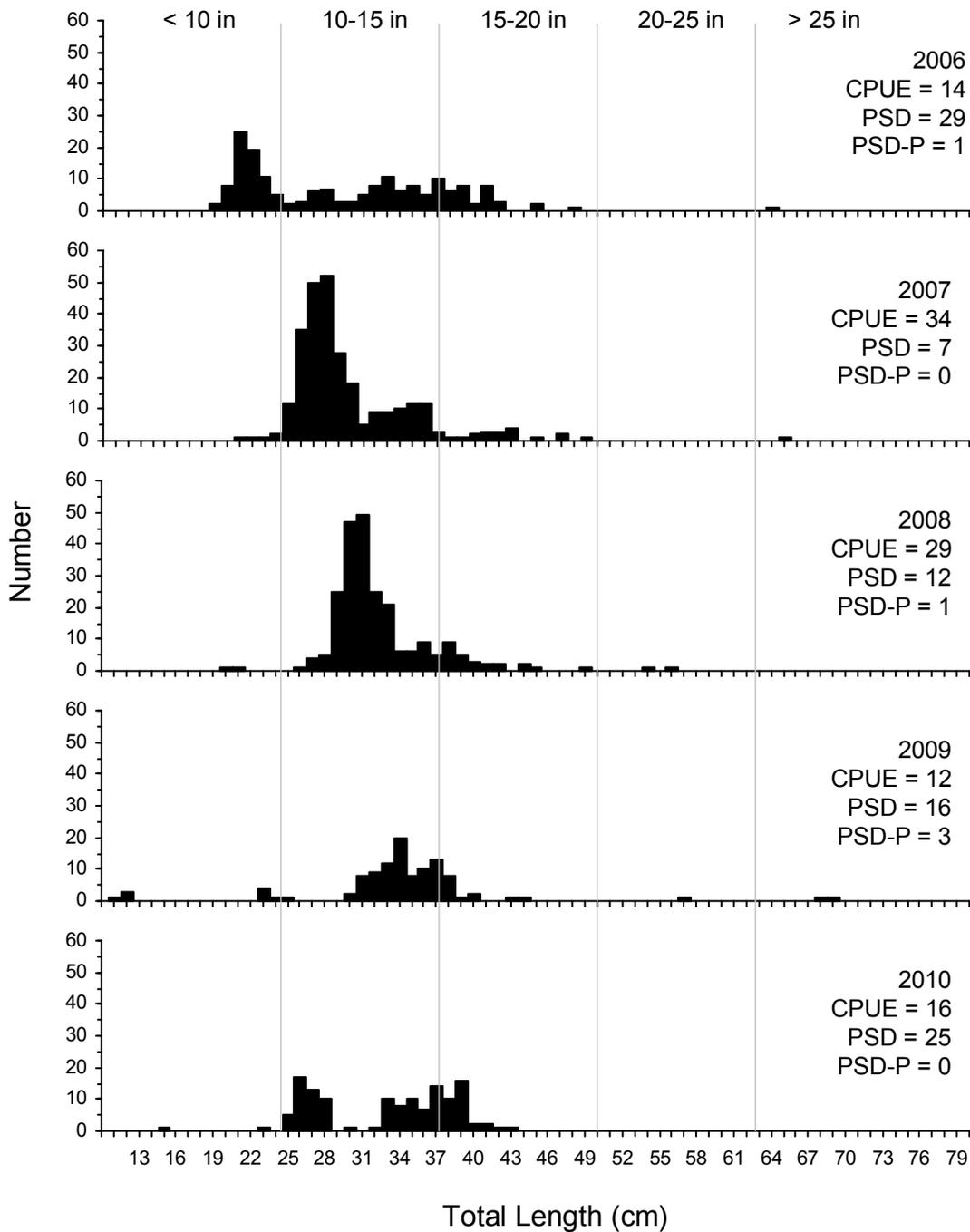


Figure 3. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish for walleye captured using experimental gill nets in Waubay Lake, 2006-2010.

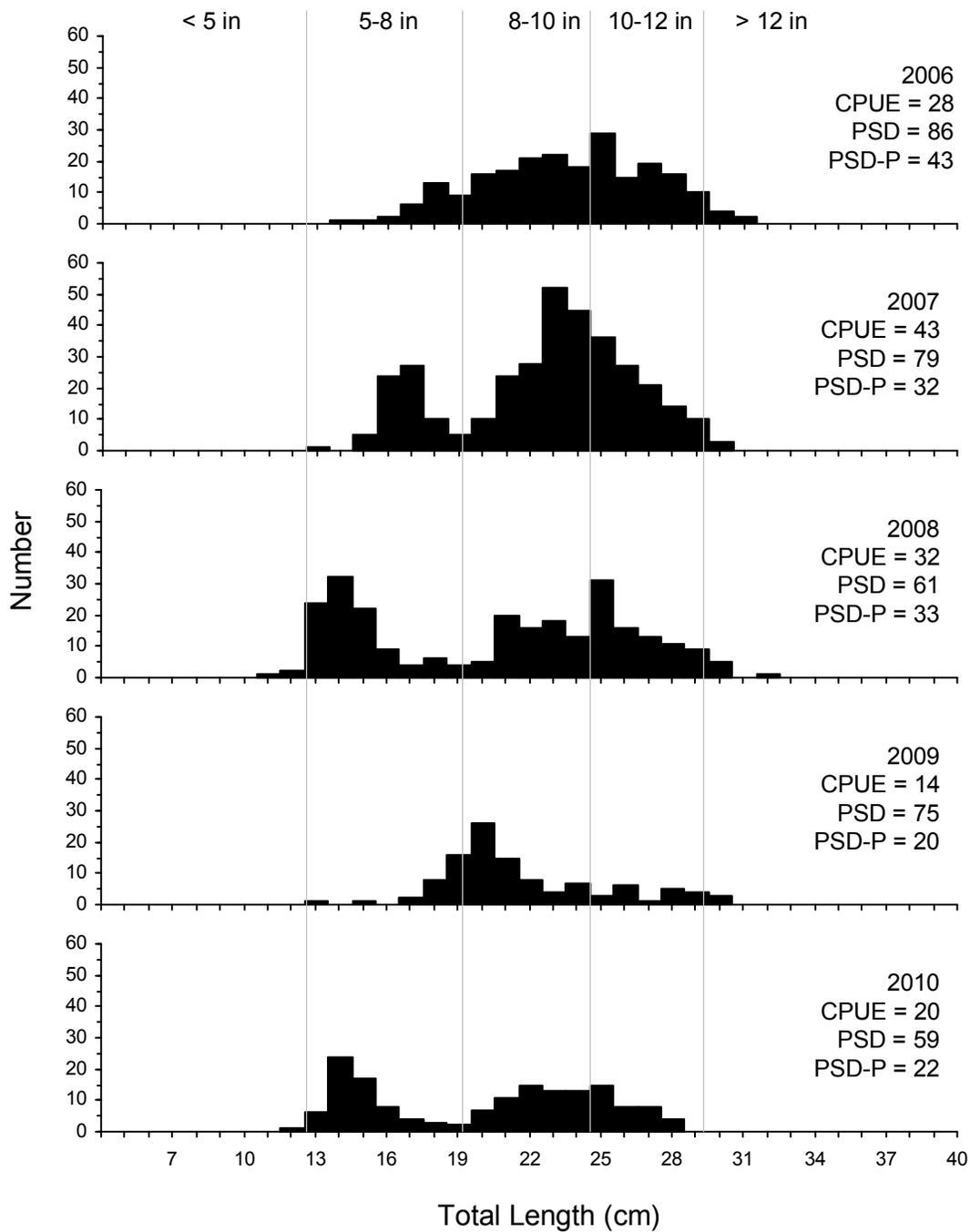


Figure 4. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish for yellow perch captured using experimental gill nets in Waubay Lake, 2006-2010.

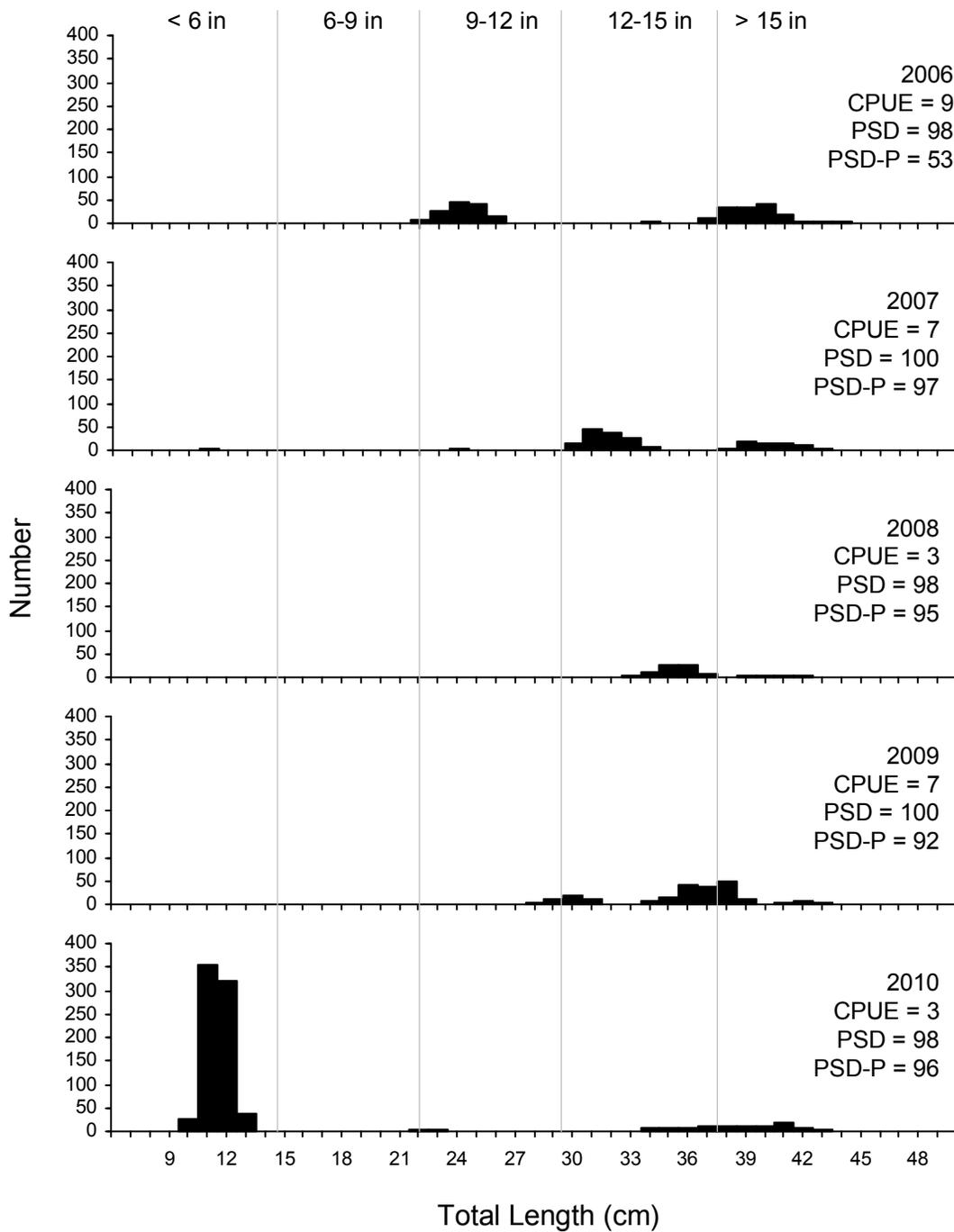


Figure 5. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish for white bass captured using frame nets in Waubay Lake, 2006-2010.