

Mina Lake Site Description

Location

Water designation number (WDN)	26-0003-00
Legal description	T123N-R66W-Sec.12-14, 23-26
County (ies)	Brown; Edmunds
Location from nearest town	14 miles east of Ipswich, South Dakota

Survey Dates and Sampling Information

Survey dates	July 20-22, 2010 (FN, GN) September 27, 2010 (EF-WAE)
Gill net sets (n)	6
Frame net sets (n)	18
Fall electrofishing-WAE (min)	50

Morphometry (Figure 1)

Watershed area (acres)	195,000
Surface area (acres)	806
Maximum depth (ft)	27
Mean depth (ft)	9

Ownership and Public Access

Mina Lake is an impoundment owned by the State of South Dakota and the fishery is managed by the SDGFP. SDGFP manages two access sites on Mina Lake, one within the state park and the other along the southeastern shore near the outlet structure (Figure 3). The Mina Lake shoreline has mixed ownership including the State of South Dakota and private parties.

Watershed and Land Use

Land use within the Mina Lake watershed is primarily agricultural with approximately 47% being cropland (cultivated and non-cultivated) and 40% being range/pastureland (Smith 2002). Housing and small shelterbelts/farmsteads comprise the remaining portions.

Water Level Observations

SDGFP personnel indicated that Mina Lake was near full pool at the time of the 2010 netting survey.

Aquatic Nuisance Species Monitoring

Plant Survey

Emergent vegetation, primarily cattail is limited to upper portions of the impoundment; while scattered beds of submersed vegetation are found in protected areas throughout the impoundment. Sago pondweed was the only submersed aquatic plant species sampled from Mina Lake 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 was the only aquatic nuisance fish species captured during the 2010 survey; however, a single rudd was captured during the 2002 survey.

Fish Management Information

Primary species	black crappie, bluegill, channel catfish, walleye,
Other species	black bullhead, common carp, emerald shiner, freshwater drum, golden shiner, green sunfish, largemouth bass, northern pike, orange spotted sunfish, rock bass, rudd, shortnose gar, white bass, white sucker, yellow perch
Lake-Specific regulations	NE Panfish Management Area: 10 daily; 50 possession
Management classification	warm-water permanent
Fish Consumption Advisories	none

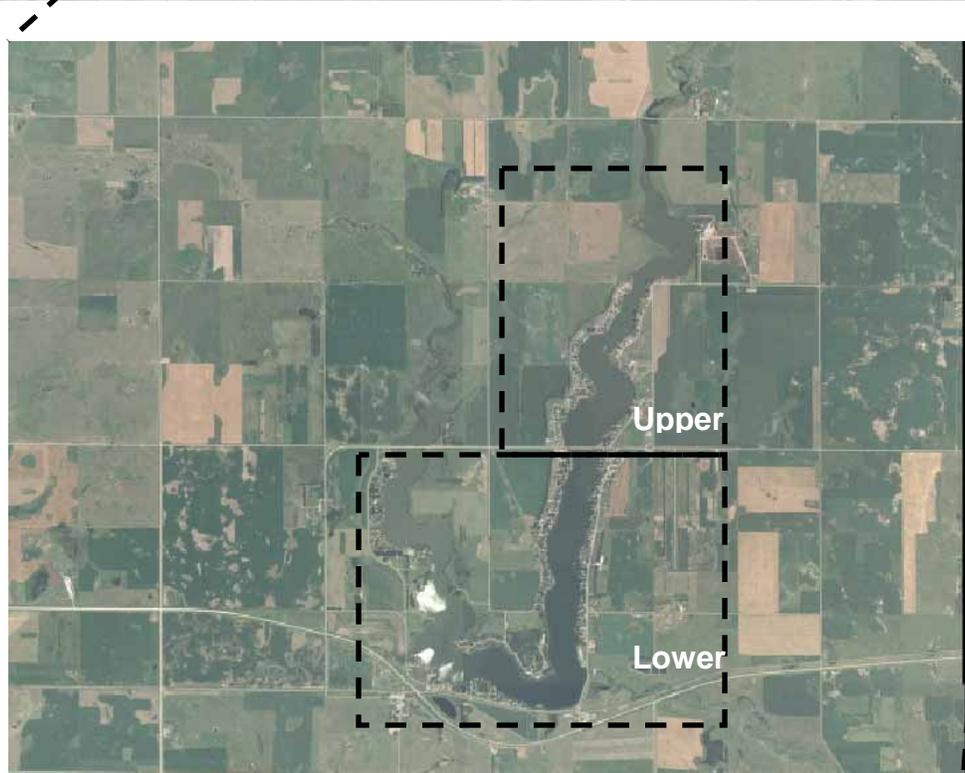
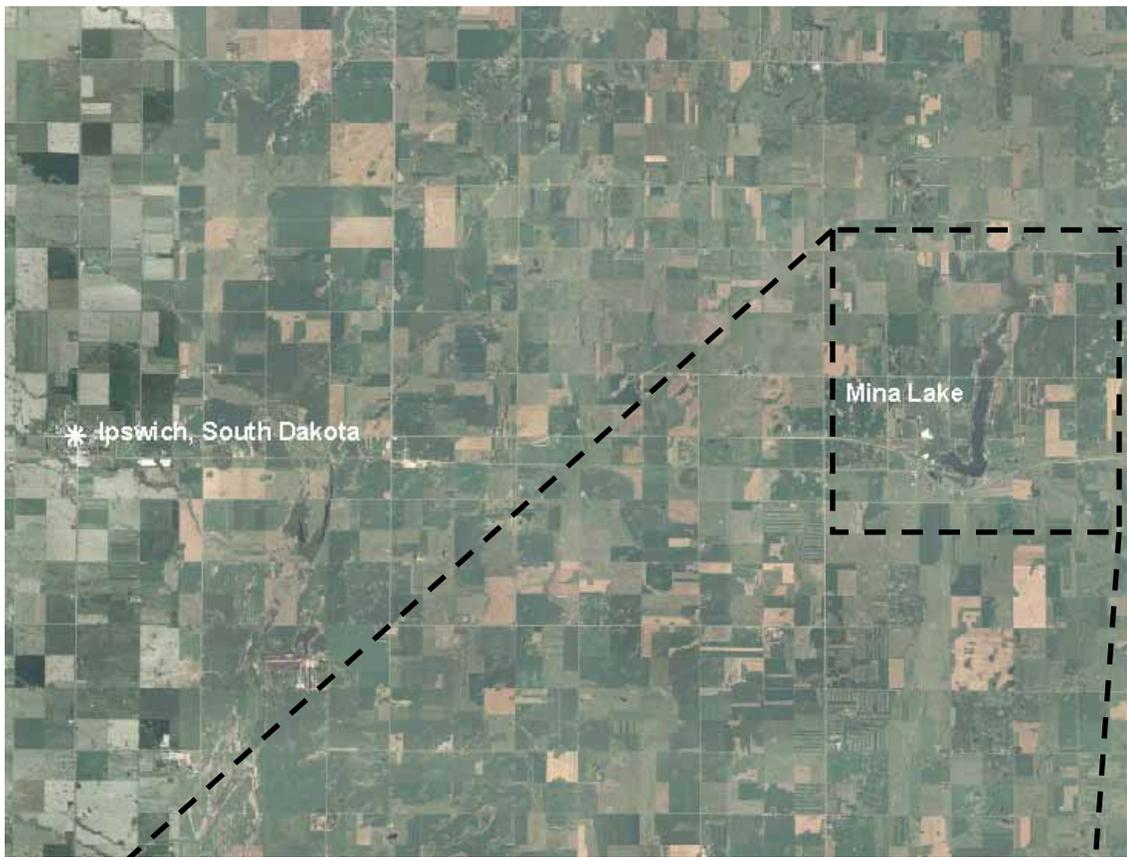


Figure 2. Map depicting geographic location of Mina Lake from Ipswich, Edmunds County, South Dakota (top). Also noted are upper and lower section designations (bottom).

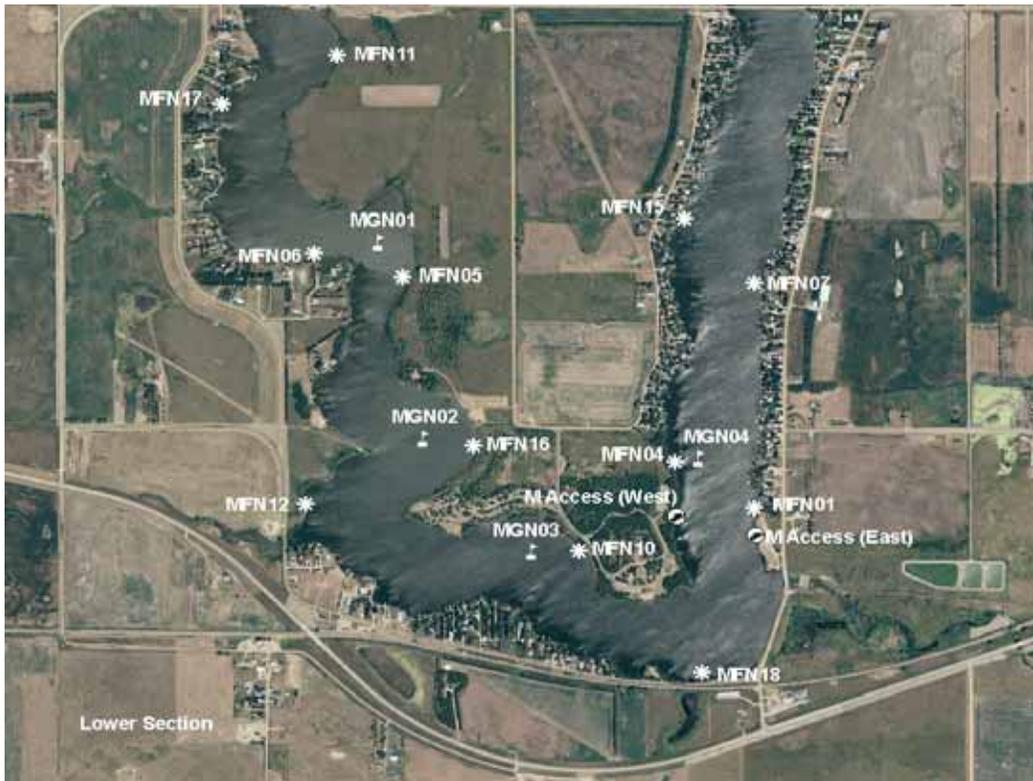
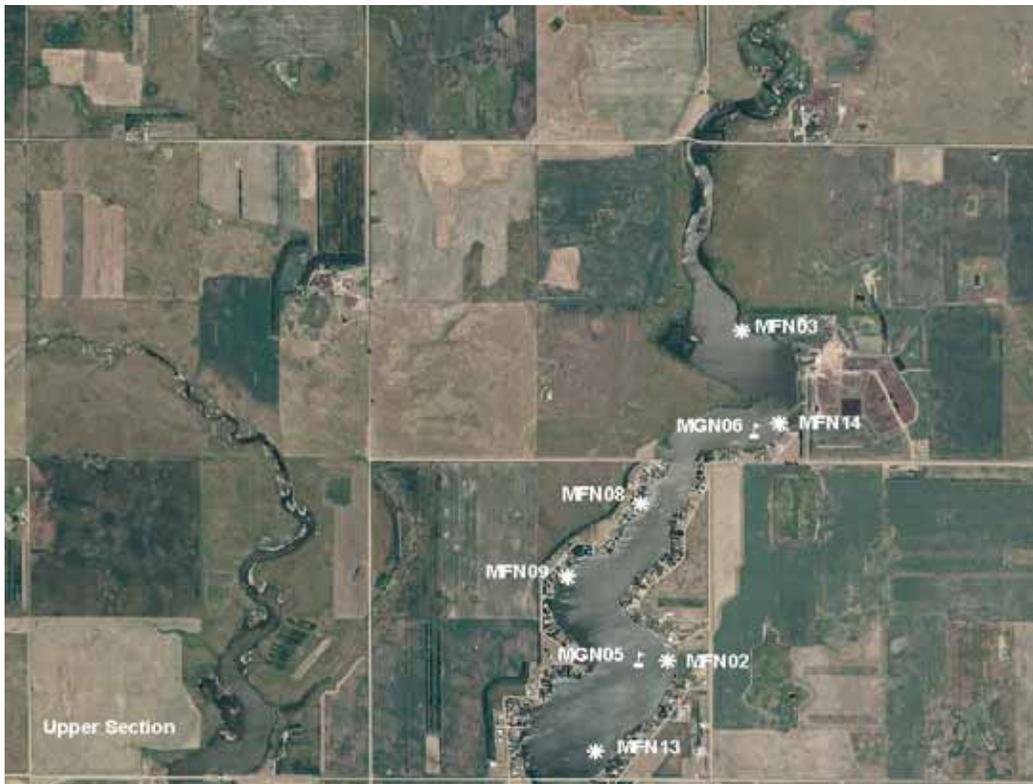


Figure 3. Map depicting access points and standardized net locations for upper and lower sections of Mina Lake, Edmunds County, South Dakota. MFN= frame nets, MGN= gill nets

Management Objectives

- 1) Maintain a mean frame net CPUE of stock-length black crappie ≥ 10 , a PSD of 30-60, and a PSD-P of 5-10.
- 2) Maintain a mean frame net CPUE of stock-length bluegill ≥ 25 , a PSD of 30-60, and a PSD-P of 5-10.
- 3) Supplement the channel catfish population to diversify sport fishing opportunity in Mina Lake.
- 4) Maintain a mean gill net CPUE of stock-length walleye ≥ 10 , a PSD of 30-60, and a PSD-P of 5-10.
- 5) Maintain a mean frame net CPUE of stock-length bullhead ≤ 100 .

Results and Discussion

Mina Lake is an impoundment constructed in the 1930's on Snake Creek approximately 12 miles west of Aberdeen, South Dakota. Snake Creek drains portions of McPherson, Edmunds, and Brown counties in South Dakota (Smith 2002). Mina Lake is primarily managed as a black crappie, bluegill, channel catfish and walleye fishery.

Primary Species

Black crappie: In 2010, 20 stock-length black crappie ranging in total length from 12 to 28 cm (4.7 to 11.0 in) were captured in frame nets resulting in a mean frame net CPUE of 1.1 (Table 1; Figure 4). Since 2003, the mean frame net CPUE of black crappie has ranged from a low of 0.9 (2005) to a high of 25.9 (2006), with the 2003-2010 average being 6.9 (Table 2). The 2010 frame net CPUE was below the minimum objective (≥ 10 stock-length black crappie/net night; Table 3) and indicated low relative abundance.

Otoliths have been collected from black crappie captured in the frame net catch from 2008-2010. Age structure information indicated that black crappie from the 2005 and 2007 year classes comprised the majority of black crappie sampled during 2008 and 2009 (Table 4). In 2010, few black crappies from these year classes were captured. The majority of black crappies captured in the 2010 frame net catch were from the 2009 year class (Table 4). The 2009 year class had a weighted mean total length at capture at age-1 of 145 mm (5.7 in) indicating slower growth than the 2005 year class which had a weighted mean total length at capture at age-1 of 167 mm (6.6 in; Table 5).

Bluegill: The 2010 mean frame net CPUE of stock-length bluegill was 1.8 (Table 1) and below the minimum objective (≥ 25 stock-length bluegill/net night; Table 3). Since 2003, the mean frame net CPUE of bluegill has fluctuated from a low of 0.6 (2009) to a high of 10.8 (2007) with the 2003-2010 average being 5.4 (Table 2) Based on the 2010 frame net CPUE, relative abundance is considered low.

Bluegill in the 2010 frame net catch ranged in total length from 8 to 23 cm (3.1 to 9.1 in; Figure 5). Aging structures were not collected from bluegill in 2010; however, length-frequency analysis of bluegill sampled in the 2010 frame net catch indicated that multiple weak year classes were present (Figure 5). Although sample sizes were low, bluegill appeared to be in good condition with mean W_r values that exceeded 115 for all length categories sampled.

Channel catfish: From 2003-2006 relative abundance of channel catfish was low with mean frame net CPUE values commonly less than one stock-length channel catfish/net night (Table 2). In 2007, the mean frame net CPUE of stock-length channel catfish increased to 4.8 (Table 1) and the mean frame net CPUE of sub-stock channel catfish was 16.3. The increase in channel catfish relative abundance can likely be attributed to the 2006 stocking of 42,350 fingerlings (Table 8).

From 2008-2010, the relative abundance of channel catfish has remained relatively stable with mean frame net CPUE values ranging from 2.4 to 4.2 channel catfish/net night (Table 2). Channel catfish captured in the 2010 frame net catch ranged in total length from 27 to 49 cm (10.6 to 19.3 in; Figure 6). It appears that channel catfish likely from the 2006 stocking have begun to surpass quality-length resulting in a PSD of 29 (Table 1; Figure 6). No preferred-length channel catfish were captured in 2010.

No growth information was available. Channel catfish sampled in the 2010 frame net catch had mean W_r values that ranged from 94-100 for all length categories sampled. The majority of channel catfish captured in the 2010 frame net catch were in the stock- to quality-length category which had a mean W_r of 96.

Walleye: Since 1998, recruitment of both naturally-produced and stocked walleye has been extremely poor in Mina Lake. The cause of the poor walleye recruitment is unknown, but is currently under investigation by a South Dakota State University graduate student.

Walleye of various sizes were stocked annually from 2002-2008 with limited success (Table 6; Table 8). As a result mean gill net CPUE values for stock-length walleye remained low from 2003-2009 (Table 2). In 2010, 43 age-1 (2009 year class) walleye ranging in total length from 19 to 26 cm (7.5 to 10.2 in) were captured in the gill net catch (Figure 7) resulting in a mean gill net CPUE for all-sized walleye of 7.2. Recruitment of walleye from the 2009 year class, which coincided with a small fingerling stocking (Table 6; Table 8) represents the first substantial walleye recruitment in Mina Lake since 1998. The 2010 mean gill net CPUE of stock-length walleye was 0.7 (Table 1), but is expected to increase as walleye from the 2009 year class attain stock-length (Table 6; Figure 7).

Fall night electrofishing in 2010 resulted in a CPUE of 10.8 age-0 walleye/hour (Table 1). Age-0 walleye sampled in the fall of 2010 coincide with a small fingerling stocking (Table 8) and represent only the second instance since 2003 that age-0 walleye were sampled by fall electrofishing in Mina Lake (Table 2). Recruitment of the 2010 year class is currently unknown and will be assessed in future surveys.

Few inferences can be made concerning the size structure, growth, and condition of walleye due to low sample size, as only four stock-length walleye were captured in the 2010 gill net catch.

Other Species

Black bullhead: The 2010 mean frame net CPUE of stock-length black bullhead was 8.9 (Table 1). Since 2003, mean frame net CPUE values have ranged from 0.9 (2009) to 26.0 (2003) but remained within the objective range (≤ 100 stock-length black bullhead/net night; Table 3).

Black bullhead in the 2010 frame net catch ranged in total length from 17 to 29 cm (6.7 to 11.4 in; Figure 8). The majority of black bullheads captured in the 2010 frame net catch were in the quality-preferred length category resulting in the high PSD of 74. No preferred-length black bullheads were captured in 2010.

No growth information was collected in 2010. Frame net captured black bullheads had a mean W_r of 87 for all length categories sampled.

Freshwater Drum: The 2010 mean gill net CPUE of stock-length freshwater drum was 6.0 (Table 1) and has decreased in each of the past three surveys (Table 2). Since 2003, the mean gill net CPUE of freshwater drum has ranged from a low of 2.7 (2003) to a high of 30.2 (2007) with the 2003-2010 average being 12.5.

Freshwater drum captured in the 2010 gill net catch ranged in total length from 23 to 47 cm (9.1 to 18.5 in), had a PSD of 86, and a PSD-P of 17 (Figure 9). Growth of what appeared to be a strong 2005 year class, coupled with limited recruitment in recent years has resulted in the high size structure.

No growth information was available in 2010. Mean W_r values for freshwater drum in the 2010 gill net catch ranged from 83-96 for all length categories sampled with the mean W_r for stock-length freshwater drum being 92 (Table 1). A slight decreasing trend in W_r was observed as total length increased for freshwater drum in Mina Lake.

Northern Pike: Northern pike typically are not sampled effectively using standard lake survey methods and gill nets have not consistently sampled northern pike in Mina Lake. From 2003-2006, relative abundance of northern pike was low with the mean gill net CPUE generally less than 0.6 stock-length northern pike/net night (Table 2). In 2007, sub-stock northern pike ranging in total length from 22 to 30 cm (8.7 to 11.8 in) were captured in both gill nets and frame nets indicating recent successful natural reproduction.

From 2008-2010, mean gill net CPUE values have ranged from 1.5 to 3.5 northern pike/net night (Table 2). Northern pike captured in the 2010 gill net catch ranged in total length from 15 to 71 cm (5.9 to 28.0 in; Figure 10). It appears that a single strong year class (i.e., likely 2007) currently dominates the size structure.

No growth information was collected in 2010. The majority of northern pike sampled in the 2010 gill net catch were in the quality-preferred length category which had a mean W_r of 75.

Yellow Perch: Mina Lake has a low to moderate density yellow perch population that is likely inhibited by habitat characteristics similar to other large impoundments in Region IV (i.e., Richmond Lake and Elm Lake). The 2010 mean gill net CPUE of stock-length yellow perch was 6.0 (Table 1). Since 2003, the mean gill net CPUE of stock-length yellow perch has fluctuated from 1.7 (2008) to 12.8 (2003) with the 2003-2010 average being 6.6 (Table 2). Low relative abundance of yellow perch limits the yellow perch fishery in Mina Lake; however, yellow perch present can reach sizes attractive to anglers. Yellow perch captured in the 2010 gill net catch ranged in total length from 12 to 26 cm (4.7 to 10.2 in).

Other: Common carp, orangespotted sunfish, and white suckers were captured in low numbers during the 2010 survey (Table 1).

Management Recommendations

- 1) Conduct fish community assessment surveys on an annual basis (next survey scheduled in summer 2011) to monitor fish relative abundance, fish population size structure, fish growth and stocking success.
- 2) Collect otoliths from black crappie, bluegill, and walleye to assess the age structure and growth rates of each population.
- 3) Stock channel catfish fingerlings (≈ 50 fingerlings/acre) every third year (when available) to bolster the channel catfish fishery in Mina Lake.
- 4) Stock walleye small fingerlings (≈ 100 fingerlings/acre) if gill netting results warrant (i.e., low gill net CPUE of < 250 mm (10 inch) walleye).
- 5) Conduct research to explore poor walleye survival.

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 gill nets, frame nets, and electrofishing in Mina Lake, 2010. Confidence intervals include 80 percent (\pm CI-80) or 90 percent (\pm CI-90). BLB= black bullhead; BLC= black crappie; BLG= bluegill; CCF= channel catfish; COC= common carp; FRD= freshwater drum; NOP= northern pike; OSF= orangespotted sunfish; 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	8.9	5.3	74	6	0	---	87	<1
BLC	1.1	0.8	20	16	15	14	118	2
BLG	1.8	0.7	66	14	19	12	122	2
CCF	4.2	1.4	29	9	0	---	97	1
COC	1.0	0.4	89	13	33	20	89	3
FRD	1.1	0.7	47	20	16	15	93	3
NOP	2.4	0.7	60	13	7	7	79	2
OSF ¹	0.1	<0.1	---	---	---	---	---	---
WAE	0.3	0.1	80	43	60	52	85	5
WHS	0.3	0.2	100	0	100	0	91	4
YEP	1.0	0.5	44	21	11	13	92	3
<i>Gill nets</i>								
BLB	10.7	4.1	78	9	0	---	94	<1
BLC	0.5	0.5	0	---	0	---	113	10
CCF	0.8	0.6	60	52	0	---	105	13
COC	0.2	0.2	100	---	0	---	88	---
FRD	6.0	2.3	86	10	17	11	92	2
NOP	3.3	1.2	90	12	5	9	76	3
WAE	0.7	0.6	0	---	0	---	82	1
YEP	6.0	3.3	44	14	11	9	98	1
<i>Electrofishing</i>								
WAE ²	10.8	---	---	---	---	---	---	---

¹ All fish sizes

² Fall electrofishing-WAE; catch rate (CPUE) represents age-0 walleye/hour

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 frame nets, experimental gill nets, and by electrofishing from Mina Lake, 2003-2010. BLB= black bullhead; BLC= black crappie; BLG= bluegill; CCF= channel catfish; COC= common carp; COS= common shiner; FRD= freshwater drum; GSF= green sunfish; HYB= hybrid sunfish; NOP= northern pike; OSF= orangespotted sunfish; ROB= rock bass; SHG= shortnose gar; WAE= walleye; WHB= white bass; WHS= white sucker; YEP= yellow perch

Species	CPUE								
	2003	2004	2005	2006 ³	2007 ³	2008	2009	2010	Mean
<i>Frame nets</i>									
BLB	26.0	15.8	11.6	6.0	16.2	5.8	0.9	8.9	11.4
BLC	11.0	1.3	0.9	25.9	9.0	2.5	3.2	1.1	6.9
BLG	9.1	6.8	6.4	5.9	10.8	1.8	0.6	1.8	5.4
CCF	0.0	0.2	0.4	0.6	4.8	2.4	3.6	4.2	2.0
COC	0.1	1.0	2.4	1.7	6.0	1.9	2.1	1.0	2.0
FRD	0.4	0.7	1.2	2.3	3.7	2.3	2.1	1.1	1.7
GSF	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0
HYB ¹	0.0	0.0	0.0	2.0	0.3	0.0	0.2	0.0	0.3
NOP	1.4	0.8	0.6	0.3	0.2	3.2	2.2	2.4	1.4
OSF ¹	0.0	0.0	0.0	0.4	11.9	0.0	0.0	0.1	1.6
ROB	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
SHG ¹	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
WAE	0.3	0.1	0.3	0.5	0.2	0.3	0.3	0.3	0.3
WHB	0.2	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.1
WHS	0.2	0.2	0.1	0.7	1.2	0.3	0.3	0.3	0.4
YEP	0.6	3.1	1.4	2.3	1.1	1.7	1.9	1.0	1.6
<i>Gill nets</i>									
BLB	7.5	5.5	1.0	6.0	10.3	8.2	12.2	10.7	7.7
BLC	0.5	0.0	0.0	0.7	0.0	0.0	0.0	0.5	0.2
CCF	0.3	0.0	0.0	0.7	1.0	1.7	1.8	0.8	0.8
COC	2.5	2.3	0.8	5.2	15.5	8.7	1.2	0.2	4.6
FRD	2.7	4.0	8.2	17.0	30.2	19.0	12.8	6.0	12.5
NOP	0.2	0.5	0.5	0.0	0.0	3.5	1.5	3.3	1.2
OSF ¹	0.0	0.2	0.0	0.0	0.0	0.5	0.5	0.0	0.2
WAE	1.3	1.3	0.3	0.5	0.3	1.0	0.2	0.7	0.7
WHS	0.2	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.1
YEP	12.8	5.3	9.3	9.2	4.2	1.7	4.3	6.0	6.6
<i>Electrofishing</i>									
WAE ²	0.0	0.0	0.0	0.0	0.0	0.0	54.9	10.8	8.2

¹ All fish sizes

² Fall electrofishing-WAE; catch rate (CPUE) represents age-0 walleye/hour

³ 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 nets= catch/net night), proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish, and mean relative weight (Wr) of stock-length fish for selected species captured by frame nets and gill nets in Mina Lake, 2003-2010. BLB= black bullhead; BLC= black crappie; BLG= bluegill; CCF= channel catfish; FRD= freshwater drum; WAE= walleye

Species	2003	2004	2005	2006 [†]	2007 [†]	2008	2009	2010	Average	Objective
<i>Frame nets</i>										
BLB										
CPUE	26	16	12	6	16	6	1	9	12	≤ 100
PSD	96	99	100	90	23	45	56	74	73	---
PSD-P	4	12	25	47	6	1	0	0	12	---
Wr	84	87	89	87	87	89	88	87	87	---
BLC										
CPUE	11	1	1	26	9	3	3	1	7	≥ 10
PSD	92	100	59	6	100	58	100	20	67	30-60
PSD-P	17	74	59	5	21	44	26	15	33	5-10
Wr	106	103	117	122	113	118	117	118	114	---
BLG										
CPUE	9	7	6	6	11	2	1	2	6	≥ 25
PSD	88	38	71	72	41	94	40	66	64	30-60
PSD-P	31	20	10	7	9	3	30	19	16	5-10
Wr	122	114	119	124	122	124	124	122	121	---
CCF										
CPUE	0	<1	<1	1	5	2	4	4	2	---
PSD	---	100	100	73	0	0	5	29	44	---
PSD-P	---	0	25	36	0	0	0	0	9	---
Wr	---	119	120	109	92	88	101	97	104	---
<i>Gill nets</i>										
FRD										
CPUE	3	4	8	17	30	19	13	6	13	---
PSD	88	100	100	46	12	18	61	86	64	---
PSD-P	19	8	4	27	5	7	17	17	13	---
Wr	89	92	96	101	97	98	96	92	95	---
WAE										
CPUE	1	1	<1	1	<1	1	<1	1	1	≥ 10
PSD	63	100	100	67	100	83	100	0	77	30-60
PSD-P	25	13	50	67	50	33	0	0	30	5-10
Wr	89	96	105	105	100	107	115	82	100	---

[†] Monofilament gill net mesh size (.75", 1", 1.25", 1.5", 2" and 2.5")

Table 4. Year class distribution based on the expanded age/length summary for black crappie sampled in frame nets from Mina Lake, 2008-2010.

Survey Year	Year Class						
	2010	2009	2008	2007	2006	2005	2004
2010		16	1	2	1		
2009	---			44		12	
2008	---	---		18	1	24	1

Table 5. Weighted mean total length (mm) at capture for black crappie sampled in frame nets (expanded sample size) from Mina Lake, 2008-2010.

Year	Age			
	1	2	3	4
2010	145(16)	215(1)	280(2)	280(1)
2009	---	231(44)	---	294(12)
2008	167 (18)	204 (1)	259 (24)	295 (1)

Table 6. 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 Mina Lake, 2006-2010.

Survey Year	Year Class											
	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	
2010		43										
2009	---	1				1						
2008	---	---			1				2	2	1	
2007 ¹	---	---	---	1			1			1		
2006 ¹	---	---	---	---		1				1	1	
# stocked												
fry					800		1,500					
sm. fingerling	80	80	80	81								
lg. fingerling					23	33	58	43	8			

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

Table 7. Weighted mean total length at capture (mm) for walleye sampled in experimental gill nets (expanded sample size) from Mina 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
2010	---	224(43)	---	---	---	---	---	---	---
2009	122(1)	---	---	---	489 (1)	---	---	---	---
2008	---	---	364 (1)	---	---	---	501 (2)	493 (2)	551 (1)
2007	---	---	---	429 (1)	---	---	514 (1)	---	---
2006	---	330 (1)	---	---	---	520 (1)	520 (1)	---	---
2005	---	---	---	---	---	---	510 (2)	---	---

Table 8. Stocking history including size and number for fishes stocked into Mina Lake, 2000-2010.

Year	Species	Size	Number
2000	CCF	fingerling	16,569
	CCF	juvenile	144
2002	WAE	fingerling	8,246
2003	WAE	large fingerling	42,812
2004	WAE	fry	1,500,000
	WAE	large fingerling	57,703
2005	WAE	large fingerling	33,310
2006	WAE	fry	800,000
	WAE	large fingerling	23,110
	CCF	fingerling	42,350
2007	WAE	small fingerling	80,780
2008	WAE	small fingerling	80,000
2009	WAE	small fingerling	80,115
2010	WAE	small fingerling	80,300

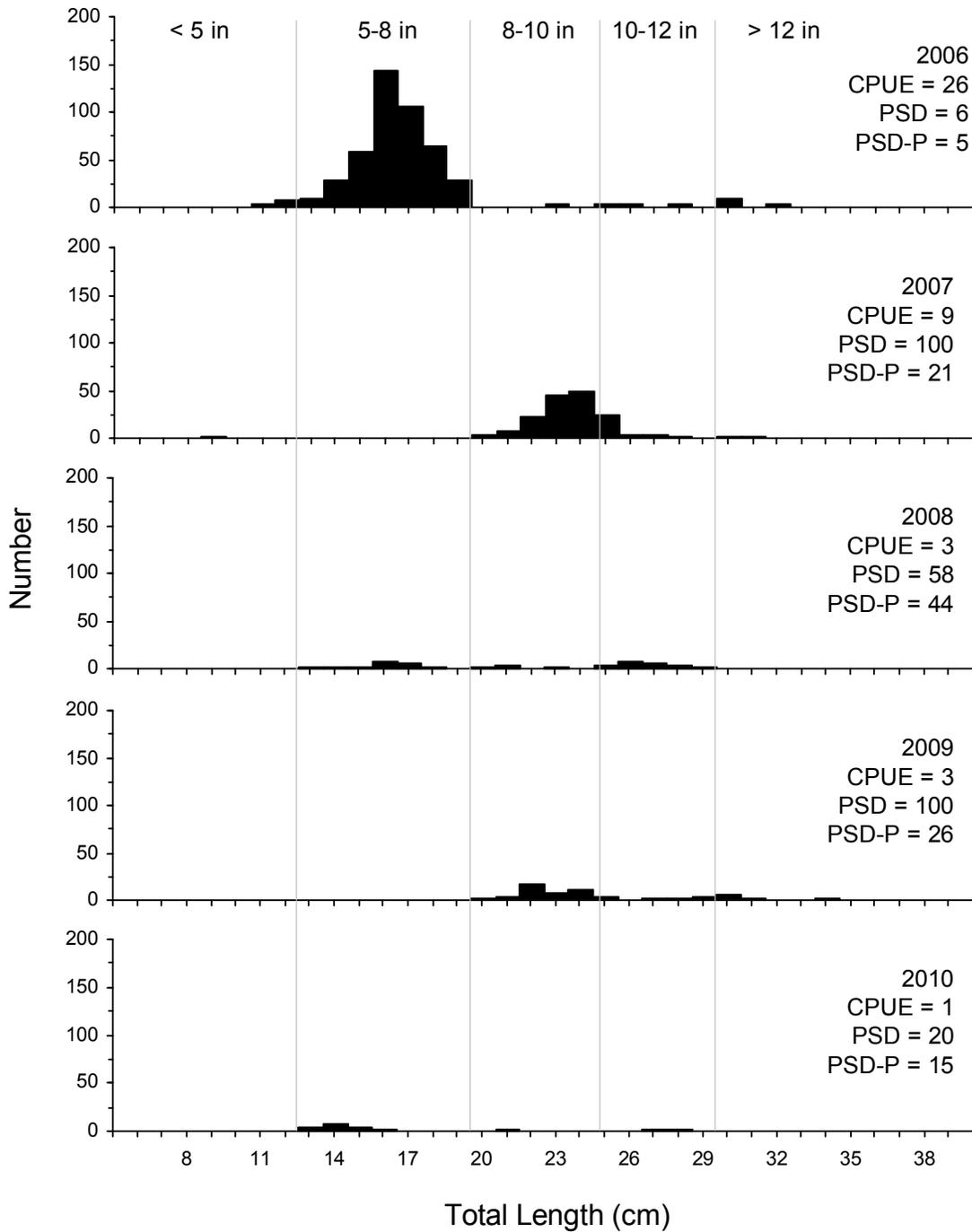


Figure 4. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish for black crappie captured using frame nets in Mina Lake, 2006-2010.

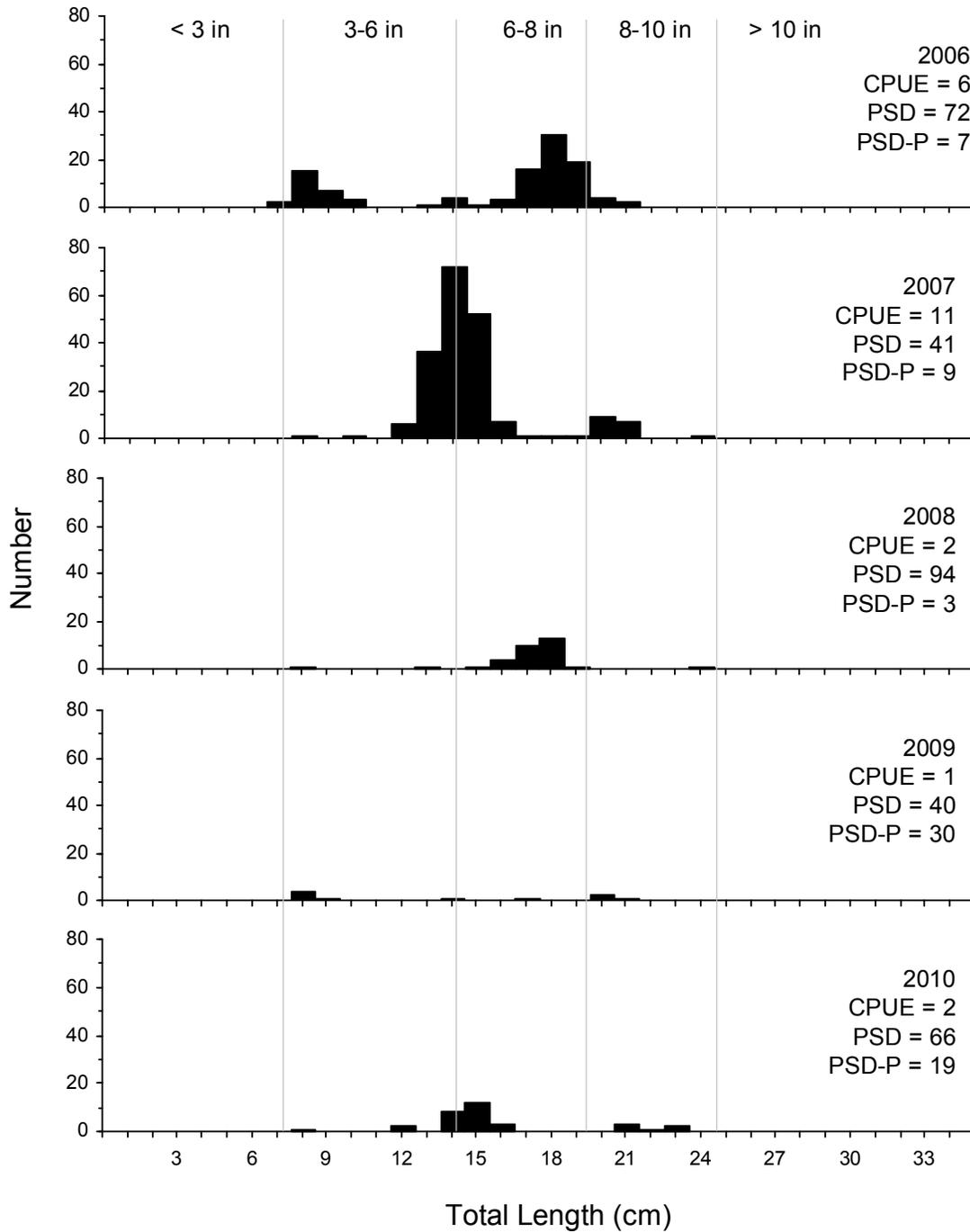


Figure 5. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish for bluegill captured using frame nets in Mina Lake, 2006-2010.

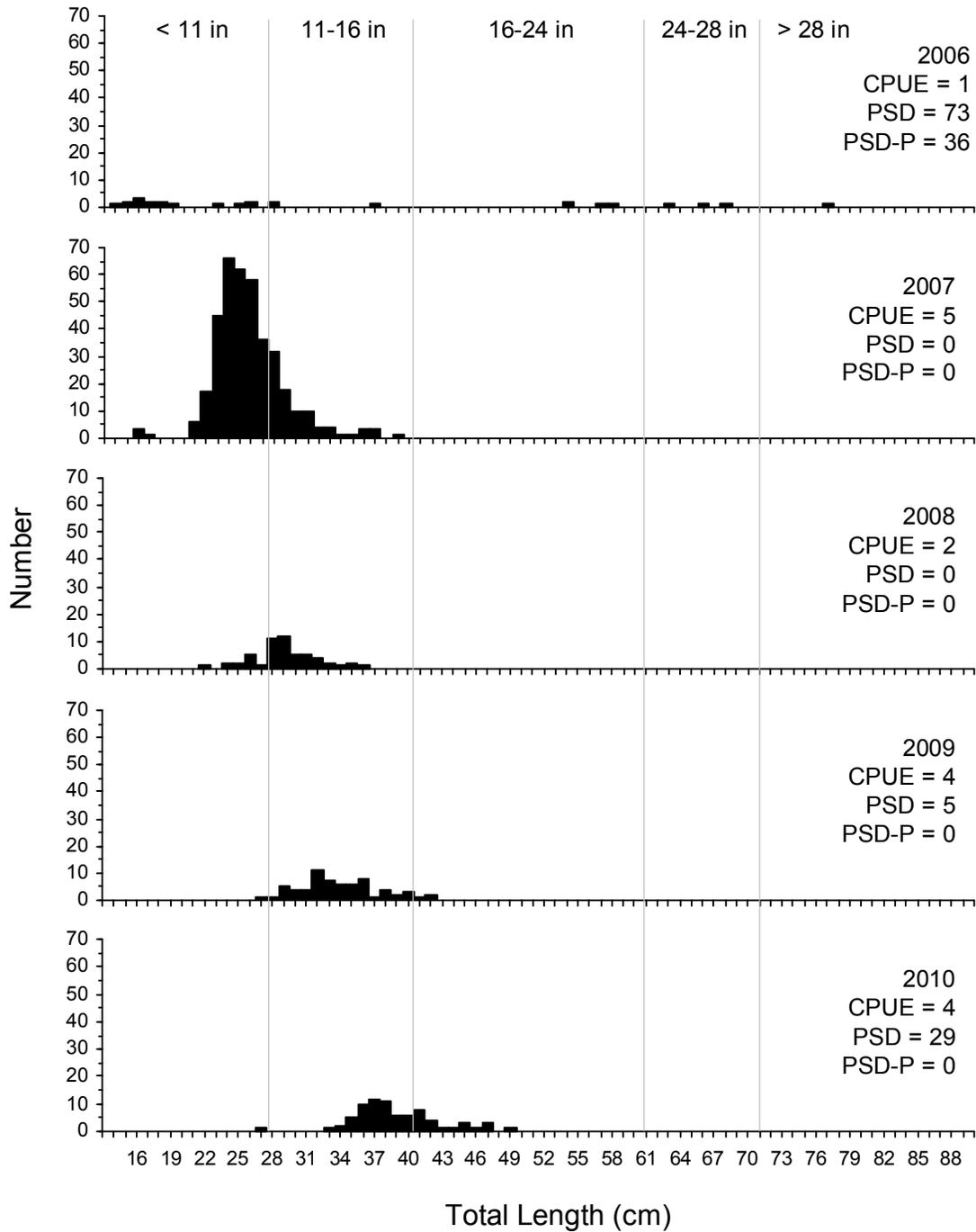


Figure 6. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish for channel catfish captured using frame nets in Mina Lake, 2006-2010.

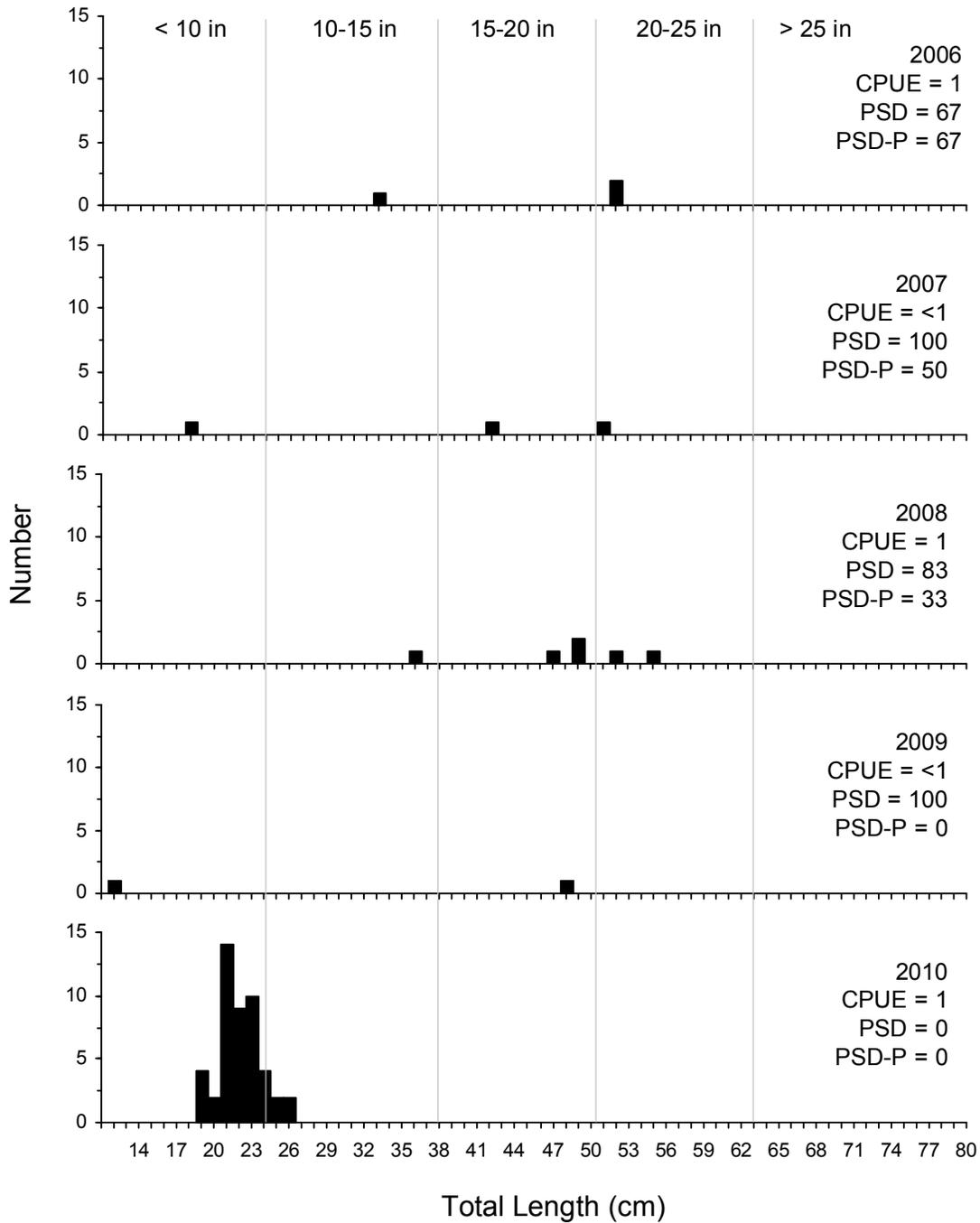


Figure 7. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish for walleye captured using gill nets in Mina Lake, 2006-2010.

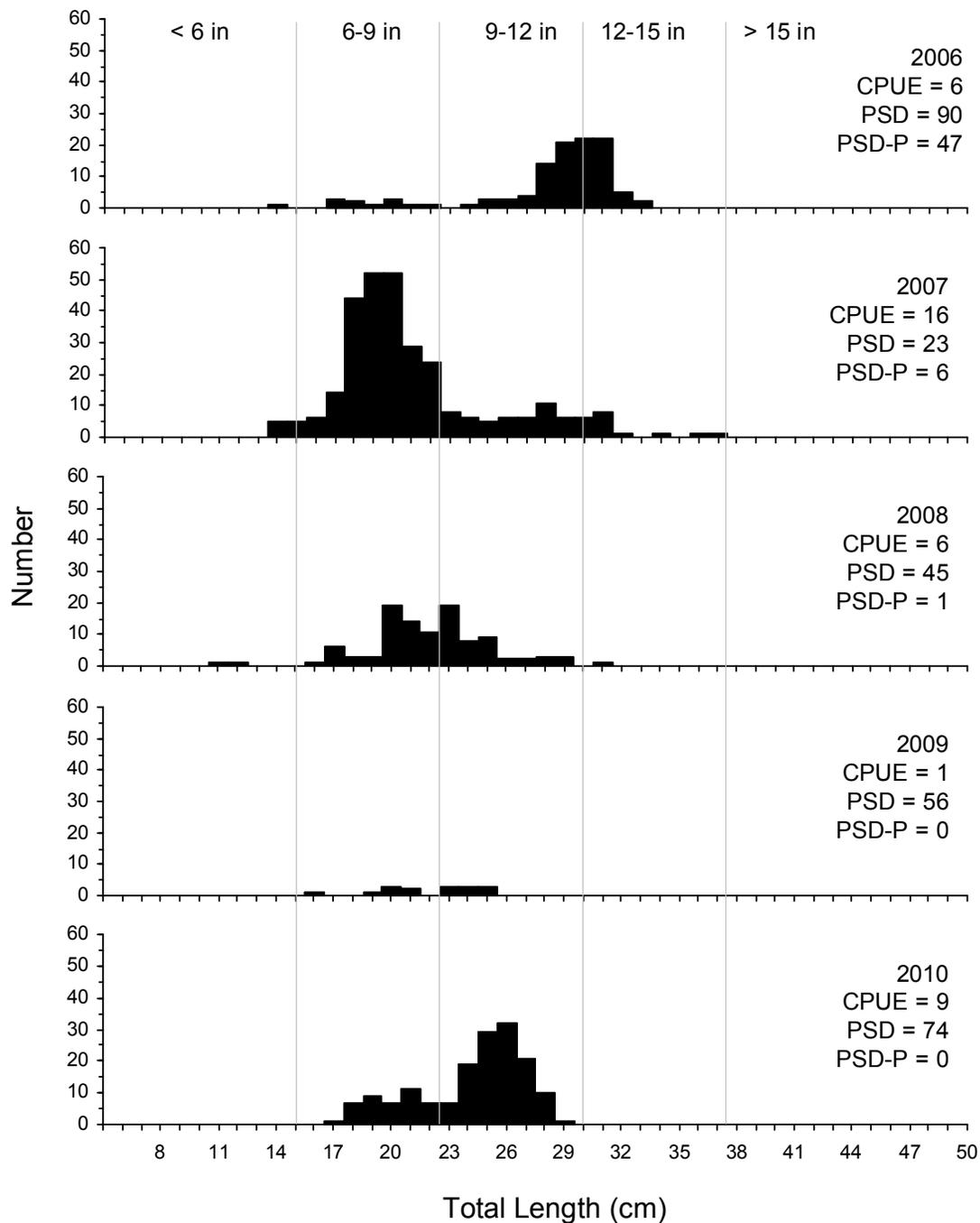


Figure 8. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish for black bullhead captured using frame nets in Mina Lake, 2006-2010.

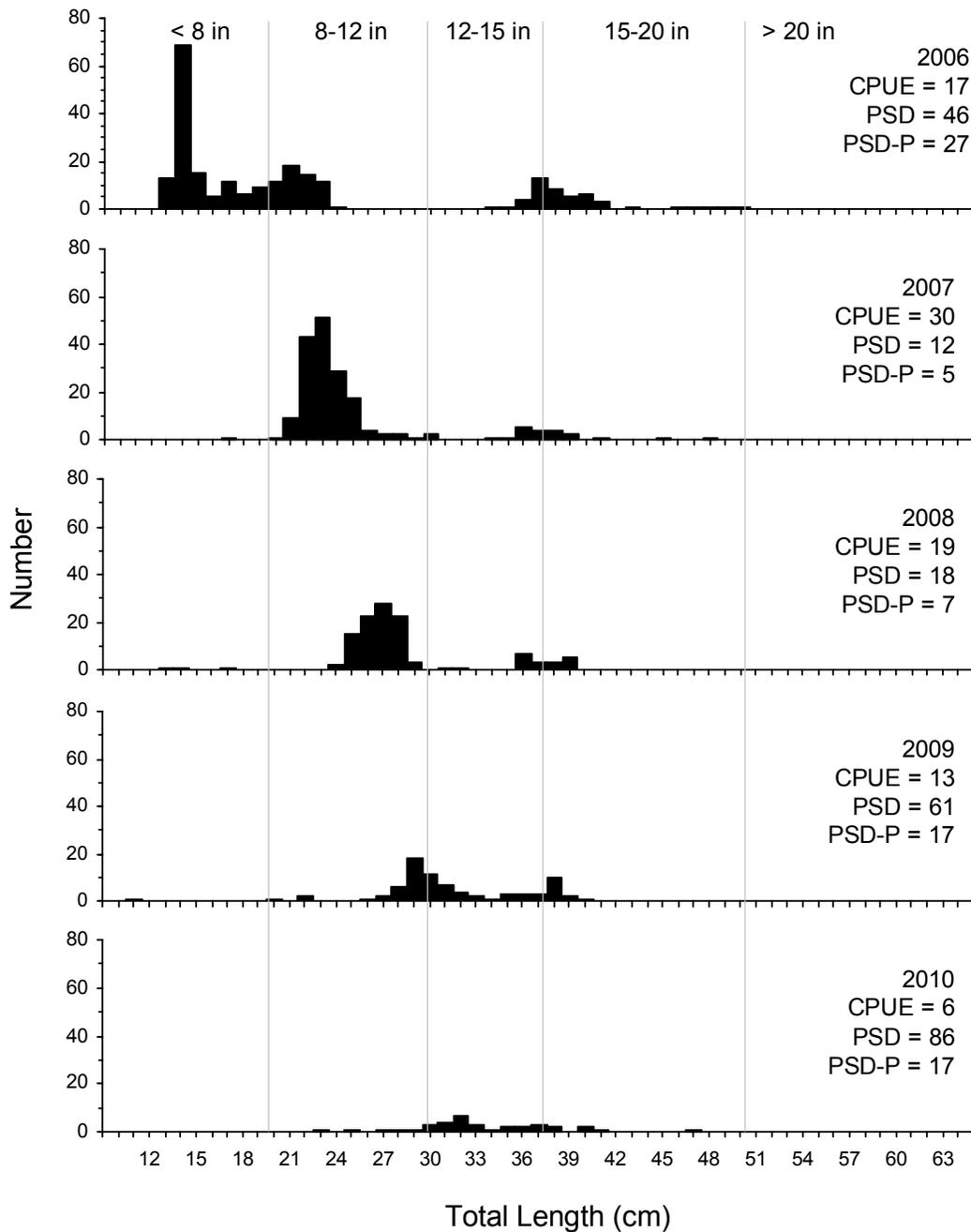


Figure 9. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish for freshwater drum captured using gill nets in Mina Lake, 2006-2010.

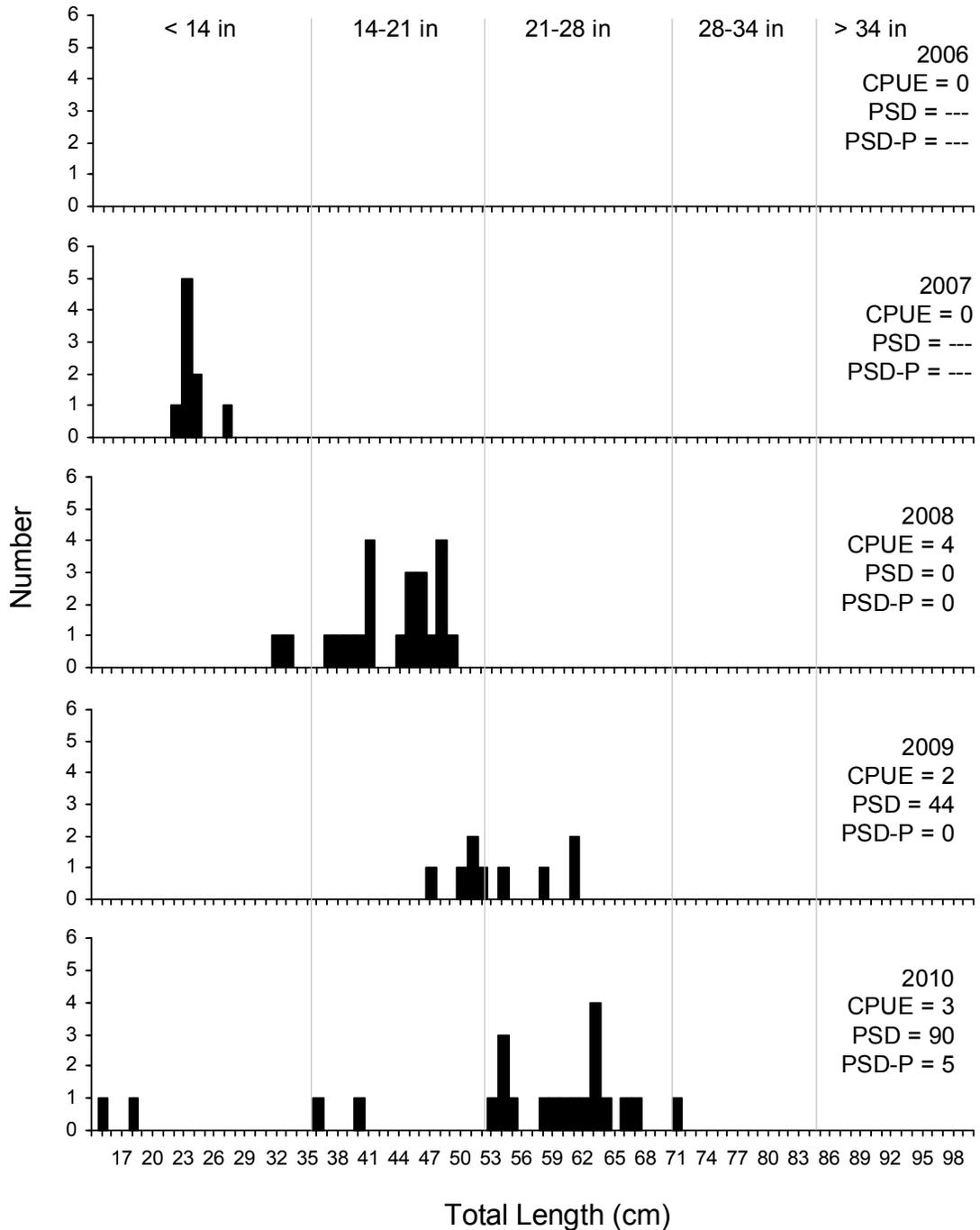


Figure 10. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish for northern pike captured using gill nets in Mina Lake, 2006-2010.