Lake Faulkton

Site Description

Location

Water designation number (WDN)	28-0005-00
Legal description	T118N-R69W-Sec.17
County (ies)	Faulk
Location from nearest town	2.5 miles west and 0.5 mile south of Faulkton, SD

Survey Dates and Sampling Information

Survey dates	August 11-12, 2015 (FN,GN)
Frame net sets (n)	12
Gill net sets (n)	3

Morphometry (Figure 1)

Watershed area (acres)	32,378
Surface area (acres)	55
Maximum depth (ft)	21
Mean depth (ft)	10

Ownership and Public Access

Lake Faulkton is an impoundment owned by the State of South Dakota and the fishery is managed by the SDGFP. A public access site, located on the north shore (Figure 2), contains a single lane boat ramp with landing dock, fishing pier, and vault toilet. Lands adjacent to Lake Faulkton are under mixed ownership including the State of South Dakota and private individuals.

Watershed and Land Use

The 32,378 acre Town of Faulkton sub-watershed (HUC-12) is located within the larger Upper South Fork Snake Creek (HUC-10) watershed. Land use within the watershed is comprised of a mix of cropland, pasture or grassland, scattered shelterbelts, and a small municipality (Faulkton).

Water Level Observations

Water levels on Lake Faulkton are not monitored by SDDENR.

Fish Management Information

Fish Species	black bullhead, black crappie, bluegill, channel catfish, emerald shiner, golden shiner, green sunfish, northern pike, yellow bullhead, yellow perch
Management classification	warm-water semi-permanent
Fish consumption advisories	none

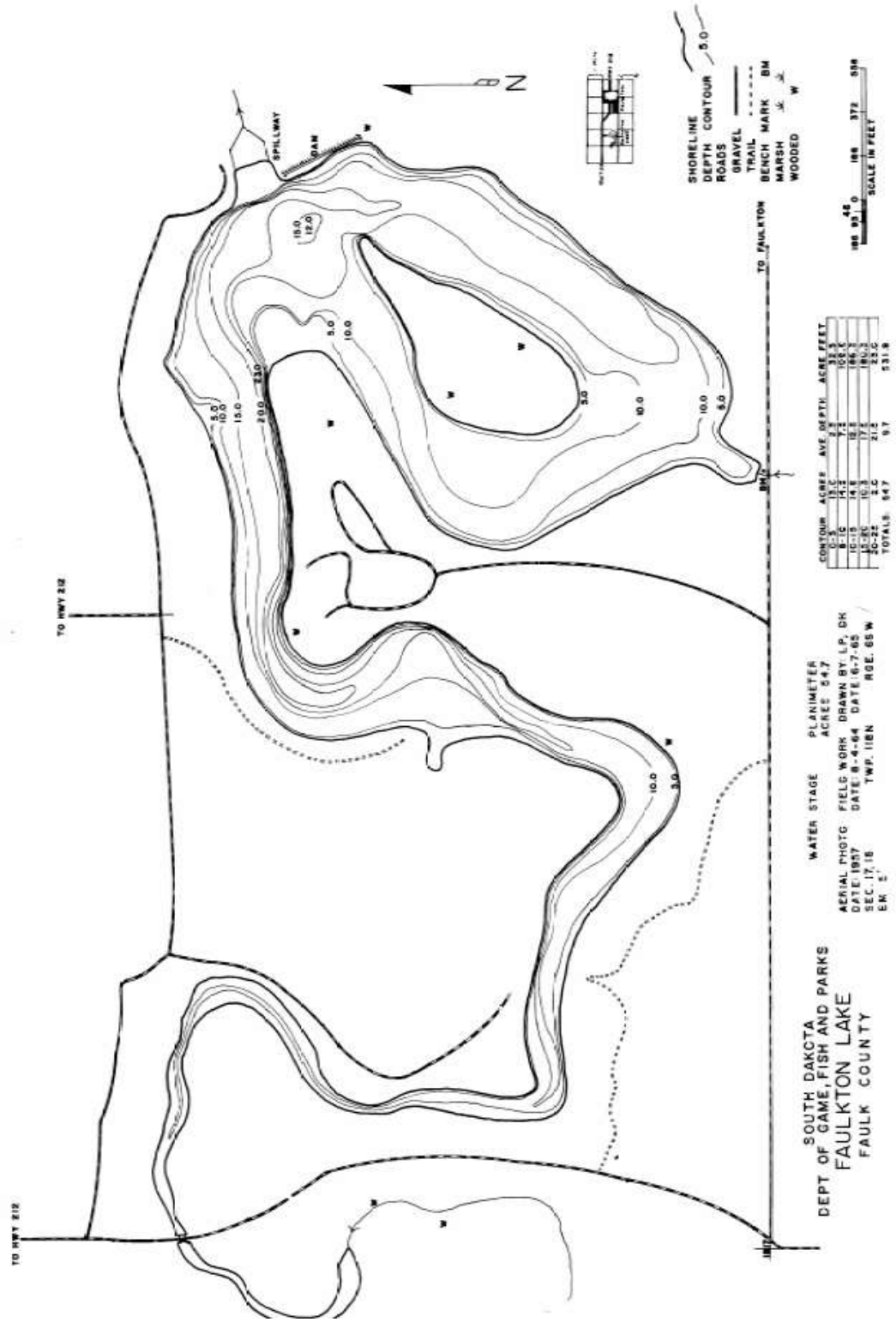

Figure 1. Depth contour map of Lake Faulkton, Faulk County, South Dakota.

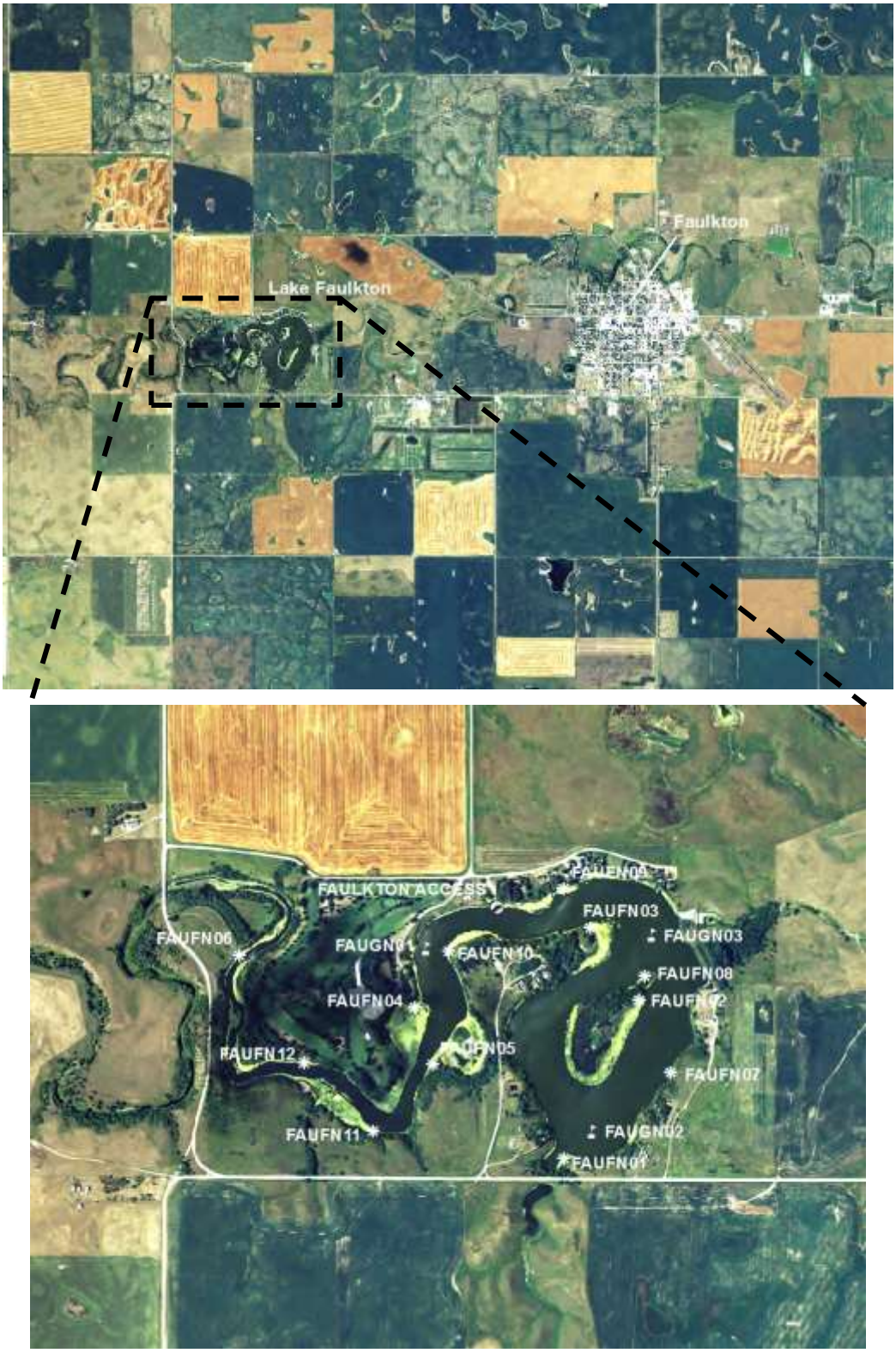

Figure 2. Map depicting geographic location of Lake Faulkton from the city of Faulkton, Faulk County, South Dakota (top). Also noted is the public access area and standardized net locations (bottom) for Lake Faulkton. FAUFN= frame net; FAUGN= gill net

Results and Discussion

Lake Faulkton is an impoundment located in central Faulk County just west of the city of Faulkton. The dam forming Lake Faulkton was constructed on the south fork of Snake Creek and was completed in 1935. Snake Creek is also known as the Nixon River, which flows easterly and enters the James River just north of Redfield, SD.

Lake Faulkton is an important fisheries resource in Faulk County, South Dakota. Unfortunately, the lake is susceptible to partial winter and/or summer kill events that limit sportfish populations (e.g., largemouth bass, walleye) and result in a fish community often dominated by black bullhead. Past management efforts have primarily been directed towards largemouth bass and panfish (i.e., bluegill, black crappie) and at times quality populations have developed. However despite the stocking of largemouth bass fingerlings on several occasions since 1997, no largemouth bass were captured during electrofishing surveys at Lake Faulkton in 1997, 2005, or 2010. In addition, walleye (both fry and small fingerlings) have been stocked on four separate occasions since 2005; similar to largemouth bass, these stockings have done little to expand the fishery as no walleye were captured during netting surveys conducted from 2005-2015 (Table 2; Table 5). As described above, fisheries management options for Lake Faulkton are limited; netting surveys conducted from 2005-2015 suggest that panfish populations, primarily bluegill, have persisted to some degree; while northern pike represent the only top-level predator sampled in recent years.

Note: Flowering Rush is an invasive species present at Lake Faulkton. Care should be taken by all user groups to prevent the spread of this species to other waterbodies. Information about flowering rush and how to prevent the spread of invasive species is available at: http://gfp.sd.gov/wildlife/nuisance/aquatic/default.aspx

Species

Black Bullhead: Black bullheads were the most abundant fish species in the frame net catch; the mean frame net CPUE of stock-length black bullhead was 142.0 (Table 1). The 2015 mean frame net CPUE represented a decrease from the 2010 CPUE of 187.0 and was the lowest reported since 2005 (Table 2). However, relative abundance is still considered high.

Frame net captured black bullhead ranged in TL from 11 to 21 cm (4.3 to 8.3 in); all were less than quality-length (i.e., 23 cm; 9 in) resulting in PSD and PSD-P of 0 (Table 1). No growth information was collected. A decreasing trend in condition was apparent across 10-mm length groups represented; however, all stock-length bullheads sampled were in the stock-quality length category, which had a mean Wr of 96.

Black Crappie: Since 2005, relative abundance of black crappie has generally been low to moderate with mean frame net CPUE values for stock-length individuals that ranged from 0.8 (2015) to 4.0 (2010; Table 2). In 2015, the entire frame net sample was comprised of 11 black crappies that ranged in TL from 12 to 20 cm (4.7 to 7.9 in).

Given the low sample size, few inferences can be made concerning other population parameters (e.g., size structure, condition).

Bluegill: The 2015 mean frame net CPUE for stock-length bluegill was 11.0 (Table 1) and similar to the 2010 CPUE of 11.8 (Table 2). Based on each of the past two surveys (2010 and 2015), relative abundance appears to be moderate. Sampled bluegill ranged in TL from 11 to 19 cm (4.3 to 7.5 in), had a PSD of 28 and PSD-P of 0 (Table 1; Figure 3).

Otoliths collected from a sub-sample of bluegill in 2015 suggested the presence of two year-classes (2010 and 2011); the 2011 cohort was the most abundant and comprised 96% of the sample (Table 3). Based on the 2010 and 2015 samples, growth of bluegill in Lake Faulkton appears to be variable (Table 4). In 2010, bluegill growth was reported as fast, with age-3 bluegill having a weighted mean TL at capture of 179 mm (7.0 in). In comparison, the weighted mean TL of age-4 bluegill in 2015 was only 145 mm (5.7 in; Table 4). Frame net captured bluegill were in lower condition than is usually observed in northeast South Dakota waters with mean Wr values < 100 for all length categories (e.g., stock to quality) sampled. The mean Wr of stock-length individuals was 92 (Table 1) and no length-related trends in condition were apparent.

Golden Shiner: Golden shiners, which were not represented in surveys conducted in 2005 or 2010, were the most numerous fish species in the 2015 gill net catch; the mean gill net CPUE was 54.7 (Table 1; Table 2).

Northern Pike: In past surveys (2005 and 2010), northern pike were represented in the frame net catch but not the gill net catch (Table 2). In 2015, northern pike were sampled in both frame nets and gill nets; mean CPUE values of stock-length pike were 1.1 and 2.7 for frame nets and gill nets, respectively (Table 1). Gill net captured northern pike ranged in TL from 54 to 78 cm (21.3 to 30.7 in). Few inferences can made concerning other population parameters (e.g., size structure, condition) due to limited netting effort and low sample size.

Other: Channel catfish, green sunfish, yellow bullhead, and yellow perch were also captured during 2015 (Table 1).

Management Recommendations

1) Conduct fish population assessment surveys utilizing gill nets and frame nets on an every fifth year basis (next survey scheduled in summer 2020) to monitor fish relative abundance, fish population size structures, fish growth, and stocking success.

2) Stockings of top-level predators, other than northern pike, should be limited to instances when water levels are favorable (i.e., lake is full), excess fish are available, and other higher priority stockings have been completed.

3) Channel catfish should be stocked to supplement the existing population, and increase angling opportunities.

4) Monitor winter and summer kill events. In cases of substantial winter/summer kill stocking should be conducted to re-establish a fish community.

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 fish (PSD-P), and mean relative weight (Wr) of stock-length fish for various fish species captured in frame nets and experimental gill nets from Lake Faulkton, 2015. Confidence intervals include 80 percent (± CI-80) or 90 percent (± CI-90). BLB= black bullhead; BLC= black crappie; BLG= bluegill; CCF= channel catfish; GOS= golden shiner; GSF= green sunfish; NOP= northern pike; YEB= yellow bullhead; YEP= yellow perch

	Abundance		Stock Density Indices				Condition	
Species	CPUE	CI-80	PSD	CI-90	PSD-P	CI-90	Wr	CI-90
Frame nets								
BLB	142.0	59.9	0	---	0	---	96	1
BLC	0.8	0.6	10	18	0	---	101	16
BLG	11.0	4.8	28	6	0	---	92	1
CCF	0.1	0.1	100	---	0	---	87	---
GOS[1]	0.2	0.2	---	---	---	---	---	---
GSF	0.1	0.1	0	---	0	---	141	---
NOP	1.1	0.6	92	13	46	26	87	2
YEB	0.7	0.5	0	---	0	---	90	5
YEP	1.8	1.6	33	19	0	---	83	2
Gill nets								
BLB	42.3	64.5	0	---	0	---	87	<1
BLC	2.7	5.0	0	---	0	---	96	2
BLG	5.0	3.8	13	16	0	---	96	2
GOS[1]	54.7	62.8	---	---	---	---	---	---
NOP	2.7	5.0	100	0	13	23	91	3
YEB	1.1	1.1	0	---	0	---	114	8
YEP	9.0	15.1	0	---	0	---	99	2

[1] All fish sizes

Table 2. Historic mean catch rate (CPUE; gill/frame nets = catch/net night) of stock-length fish for various fish species captured in frame nets and experimental gill nets from Lake Faulkton, 2002-2015. BLB= black bullhead; BLC= black crappie; BLG= bluegill; CCF= channel catfish; EMS= Emerald Shiner; GOS= golden shiner; GSF= green sunfish; NOP= northern pike; OSF= orangespotted sunfish; ROB= rock bass; WAE= walleye; WHS= white sucker; YEB= yellow bullhead; YEP= yellow perch

	CPUE		
Species	2005[3]	2010	2015
Frame nets			
BLB	614.1	187.0	142.0
BLC	1.3	4.0	0.8
BLG	1.4	11.8	11.0
CCF	0.0	0.5	0.1
GOS[1]	0.0	0.0	0.2
GSF	0.0	0.0	0.1
NOP	0.2	0.3	1.1
YEB	0.0	0.0	0.7
YEP	0.0	1.0	1.8
Gill nets			
BLB	0.0	6.5	42.3
BLC	0.0	0.5	2.7
BLG	0.0	0.0	5.0
EMS[1]	0.0	0.5	0.0
GOS[1]	0.0	0.0	54.7
NOP	0.0	0.0	2.7
YEB	0.0	0.0	1.0
YEP	0.0	0.5	9.0

[1] All fish sizes
[2] Monofilament gill net mesh size change (0.75”, 1.00”, 1.25”, 1.50”, 2.00” and 2.50”)
[2] Sampled collected in early-June

Table 3. Year class distribution based on the expanded age/length summary for bluegill sampled in frame nets from Lake Faulkton, 2010-2015.

	Year Class										
Survey Year	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005
2015					126	5					
2010	---	---	---	---	---	---	---	4	64		2

Table 4. Weighted mean TL (mm) at capture for bluegill sampled in frame nets (expanded sample size) from Lake Faulkton, 2010-2015.

	Age				
Year	1	2	3	4	5
2015	---	---	---	145(126)	145(5)
2010	---	153(4)	179(64)	---	206(2)

Table 5. Stocking history including size and number for fishes stocked into Lake Faulkton, 1997-2015. BLG= bluegill; CCF= channel catfish; LMB= largemouth bass; SMB= smallmouth bass; WAE= walleye

Year	Species	Size	Number
1997	LMB	fingerling	18,880
1998	LMB	fingerling	16,042
1999	LMB	fingerling	12,100
2000	LMB	fingerling	11,020
2005	BLG	juvenile	1,075
	LMB	fingerling	5,400
	SMB	fingerling	2,420
	WAE	fingerling	4,000
2006	CCF	fingerling	5,390
2010	WAE	fry	50,000
2011	BLG	adult	1,000
	YEP	adult	1,700
2012	BLG	adult	1,300
	WAE	fry	55,000
2013	CCF	fingerling	1,380
	LMB	fingerling	2,880
2014	WAE	fry	30,000

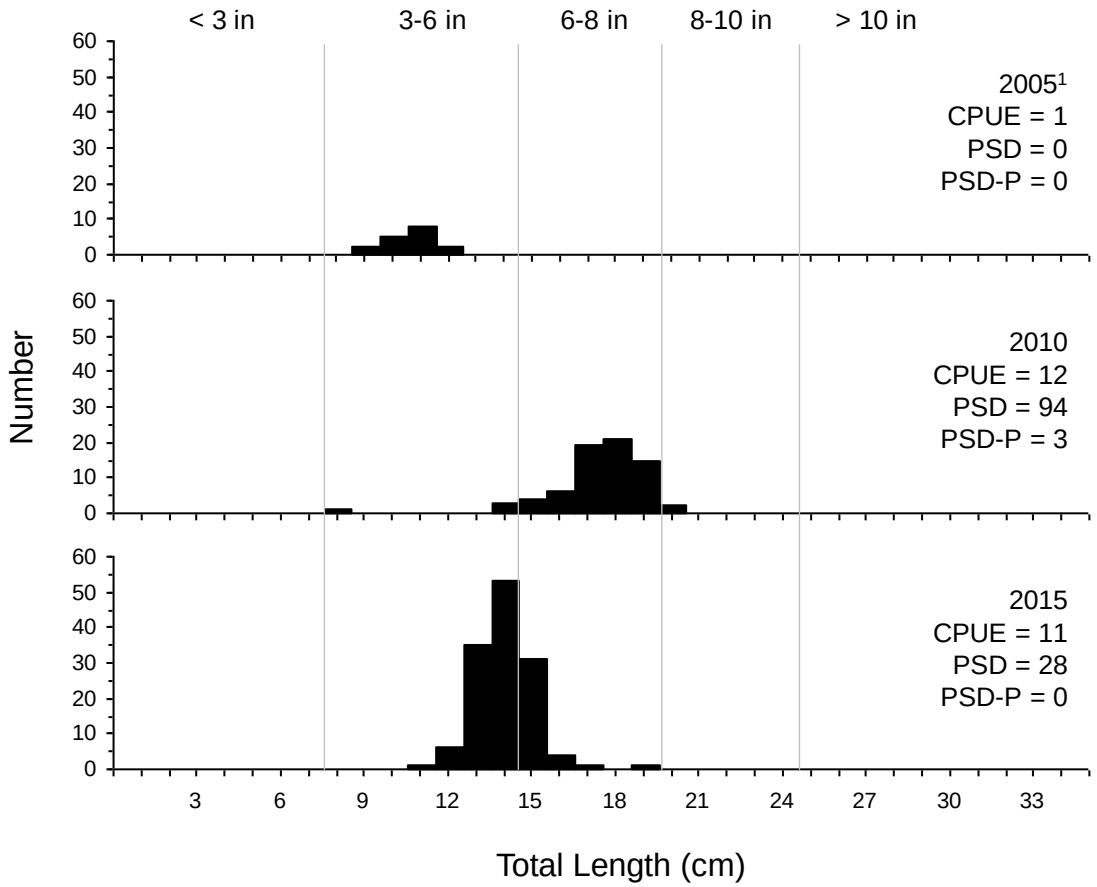

Figure 3. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish for bluegill captured using frame nets in Lake Faulkton, 2005-2015.

[1]Sampled collected in early-June.