North Scatterwood Lake

Site Description

Location

Water designation number (WDN)	26-0006-00
Legal description	T120N-R66W-Sec.2 T121N-R66W-Sec.25,26,34,35,35
County (ies)	Edmunds; Faulk
Location from nearest town	5 miles north and 1 mile west of Chelsea, SD

Survey Dates and Sampling Information

Survey dates	August 2-3, 2011 (FN, GN)
Frame net sets (n)	6
Gill net sets (n)	4

Morphometry

Watershed area (acres)	25,320
Surface area (acres)	≈1,200
Maximum depth (ft)	11
Mean depth (ft)	5

Ownership and Public Access

North Scatterwood Lake is a meandered lake managed by the SDGFP. A single public access site maintained by SDGFP is located on the north shore. Lands adjacent to North Scatterwood Lake are owned by the State of South Dakota and private individuals.

Watershed and Land Use

The 25,320 acre Scatterwood Lakes sub-watershed (HUC-12) is located within the larger Lower Preachers Run-Scatterwood Lakes (HUC-10) watershed. Land use within the watershed is primarily agricultural.

Water Level Observations

North Scatterwood Lake has no established Ordinary High Water Mark and an outlet elevation was not available. On May 24, 2011 the elevation of North Scatterwood Lake was 1341.9 fmsl and above the fall 2010 elevation of 1340.9 fmsl. By September 5, 2011 water levels had declined to 1339.5 fmsl.

Aquatic Nuisance Species Monitoring

Plant Survey

Areas of emergent vegetation and submerged vegetation are present in North Scatterwood Lake. Sago pondweed was the only submerged aquatic plant species identified during the 2011 survey. No aquatic nuisance plant species were encountered.

Shoreline Survey

No aquatic nuisance species were identified in 2011.

Fish Community Survey

Common carp was the only aquatic nuisance fish species captured in 2011.

Fish Management Information

Primary species	northern pike, yellow perch
Other species	bigmouth buffalo, black bullhead, black crappie, bluegill, common carp, freshwater drum, shorthead redhorse, walleye, white sucker, yellow bullhead, yellow perch
Lake-specific regulations	none
Management classification	warm-water marginal
Fish Consumption Advisories	none

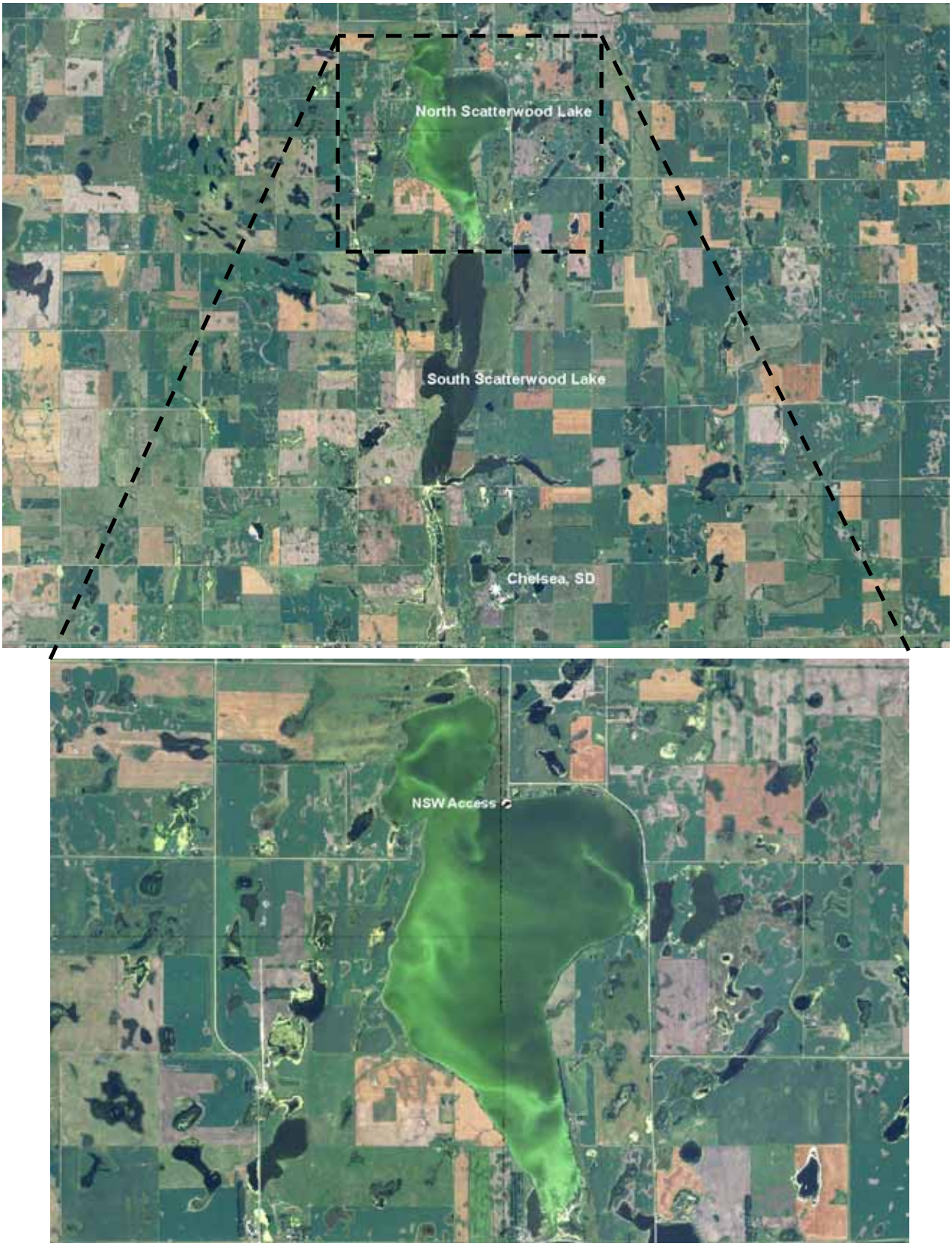

Figure 1. Map depicting geographic location of North Scatterwood Lake from Chelsea, South Dakota (top). Also noted is the North Scatterwood Access Area. NSW= North Scatterwood Lake

Management Objectives

1) Maintain a mean gill net CPUE of stock-length northern pike ≥ 3, a PSD of 30-60, and a PSD-P of 5-10.

2) Maintain a mean gill net CPUE of stock-length yellow perch ≥ 30, a PSD of 30-60, and a PSD-P of 5-10.

3) Maintain a mean frame net CPUE of stock-length bullhead ≤ 100.

Results and Discussion

North Scatterwood Lake is one of the largest natural lakes in Edmunds County, South Dakota. The lake covers approximately 1,200 acres but is relatively shallow with a maximum depth of 11 ft and a mean depth of 5 ft. Due to its shallow nature, North Scatterwood Lake suffers frequent winterkill events which often limit sport fish populations and results in a fish community comprised of a high proportion of undesirable fish species such as black bullhead and common carp. However in recent years, favorable (i.e., high) water conditions coupled with limited snow cover have allowed a relatively-abundant walleye year class to develop and provide angling opportunity. Currently, North Scatterwood Lake is managed as a northern pike and yellow perch fishery.

Primary Species

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. In 2011, nine stock-length northern pike that ranged from 49 to 78 cm (19.3 to 30.7 in) were captured in the gill net catch which resulted in a mean CPUE of 2.3 (Table 1). The 2011 gill net CPUE was below the minimum objective (≥ 3 stock-length pike/net night; Table 3) and indicated moderate relative abundance.

Low sample size limits inferences that can be made regarding northern pike size structure and condition. However, individual northern pike captured in the 2011 gill net catch had Wr values that ranged from 84 to 115.

Yellow Perch: The mean gill net CPUE of stock-length yellow perch was 1.5 (Table 1), and below the minimum objective (≥ 30 stock-length yellow perch/net night; Table 3). The 2011 gill net CPUE represented an increase from the 0.6 observed in 2004 (Table 2), but still indicated low relative abundance.

Few inferences can made concerning the size structure, growth, and condition of yellow perch due to low sample size as only seven yellow perch that ranged from 12 to 19 cm (4.7 to 7.5 in) were captured in the 2011 gill net catch.

Other Species

Black Bullhead: The mean frame net CPUE of stock-length black bullhead during 2011 was 18.2 (Table 1) and within the management objective (≤ 100 stock-length black bullhead/net-night). The 2011 frame net CPUE was slightly higher than the 16.0 observed in 2004 (Table 2). Based on the 2011 frame net catch, black bullhead relative abundance appears to be moderate.

Black bullhead sampled in the 2011 frame net catch ranged in total length from 13 to 28 cm (5.1 to 11.0 in) with the majority being stock- to quality-length which resulted in low PSD and PSD-P values of 6 and 0, respectively (Table 1; Table 3; Figure 4). Black bullhead in the stock-quality length category had a mean Wr of 97.

Walleye: The shallow nature and susceptibility of North Scatterwood Lake to winterkill exclude walleye from being a primary management species. However, the potential exists for occasional walleye year classes to develop and provide angling opportunities. Therefore, walleye stockings should continue provided water levels are favorable (i.e., lake is full), excess walleye are available, and higher priority stockings have been completed.

In 2011, the relative abundance of walleye in North Scatterwood Lake was considered to be moderate with a mean gill net CPUE of 9.8 (Table 1). The 2011 gill net CPUE represented a substantial increase from the 3.6 observed in 2004 (Table 2).

Walleye captured in the 2011 gill net catch ranged in total length from 23 to 34 cm (4.7 to 13.4 in) and all were from the 2010 year class which coincided with a fry stocking (Tale 4; Figure 5). Walleye from the 2010 (age-1) year class had a weighted mean total length at capture of 295 mm (11.6 in) and most were in the stock-quality length category which had a mean Wr of 92.

Other: Bigmouth buffalo, common carp, and white sucker were other fish species captured during the 2011 fish community survey (Table 1).

Management Recommendations

1) Conduct fish community surveys utilizing gill nets and frame nets on an every fifth year basis (next survey scheduled in summer 2016) to monitor fish relative abundance, fish population size structures, fish growth, and stocking success.

2) Continue to manage as a self-sustaining northern pike and yellow perch fishery.

3) Stock walleye provided water levels are favorable (i.e., lake is full), excess walleye are available, and other higher priority stockings have been completed.

4) Collect otoliths from walleye and yellow perch to assess age structure and growth rates of each population.

5) Monitor winter and summerkill events. In cases of substantial winter/summerkill stock with northern pike and yellow perch to re-establish a fish community.

Table 1. Mean catch rate (CPUE; gill nets = catch/net night) 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 frame nets and experimental gill nets in North Scatterwood Lake, 2011. Confidence intervals include 80 percent (± CI-80) or 90 percent (± CI-90). BIB= bigmouth buffalo; BLB= black bullhead; COC= common carp; FRD= freshwater drum; NOP= northern pike; WAE= walleye; WHS= white sucker; 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	18.2	21.8	6	4	0	---	97	<1
COC	3.5	1.6	52	19	0	---	113	3
NOP	7.8	3.5	81	10	2	4	88	1
WAE	3.5	3	0	---	0	---	81	5
WHS	2.0	1.9	100	0	100	0	102	3
Gill nets								
BIB	0.3	0.4	0	---	0	---	115	---
BLB	15.0	7.7	15	8	0	---	116	<1
COC	4.5	3.0	61	21	11	13	125	9
NOP	2.3	3.1	67	31	11	21	96	6
WAE	9.8	4.1	0	---	0	---	92	1
WHS	1.3	1.5	100	0	100	0	112	5
YEP	1.5	0.8	0	---	0	---	127	8

Table 2. Historic mean catch rate (CPUE; gill nets = catch/net night) of stock-length fish for various fish species captured in frame nets and experimental gill nets from North Scatterwood Lake, 2001-2011. BLB= black bullhead; BLC= black crappie; CCF= channel catfish; COC= common carp; EMS= emerald shiner; NOP= northern pike; OSF= orangespotted sunfish; ROB= rock bass; SMB= smallmouth bass; WAE= walleye; WHB= white bass; WHS= white sucker; YEP= yellow perch

	CPUE		
Species	2001[1]	2004[2]	2011[2]
Frame nets			
BIB	0.5	0.7	0.0
BLB	26.3	16.3	18.2
BLC	3.1	2.2	0.0
BLG	0.0	0.1	0.0
COC	0.5	5.9	3.5
FRD	0.0	0.2	0.0
NOP	0.9	6.8	7.8
WAE	0.0	1.3	3.5
WHS	0.2	3.4	2.0
YEB	0.0	0.1	0.0
Gill nets			
BIB	0.0	0.8	0.3
BLB	5.2	3.8	15.0
BLC	0.0	1.0	0.0
COC	1.5	17.8	4.5
FRD	0.0	0.2	0.0
NOP	0.7	0.6	2.3
SHR	0.2	0.0	0.0
WAE	0.0	3.6	9.8
WHS	0.2	0.0	1.3
YEP	0.0	0.6	1.5

[1] Sampling conducted in early-June
[2] Sampling conducted in early-August

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) for selected species captured in frame nets and experimental gill nets from North Scatterwood Lake, 2001-2011. BLB= black bullhead; NOP= northern pike; WAE= walleye; YEP= yellow perch

Species	2001[1]	2004[2]	2011[2]	Objective
Frame nets				
BLB				
CPUE	26	16	18	≤ 100
PSD	46	28	6	---
PSD-P	0	4	0	---
Wr	92	81	97	---
Gill nets				
NOP				
CPUE	1	1	2	≥ 3
PSD	100	100	67	30-60
PSD-P	0	0	11	5-10
Wr	73	83	96	---
WAE				
CPUE	0	4	10	---
PSD	---	0	0	---
PSD-P	---	0	0	---
Wr	---	91	92	---
YEP				
CPUE	0	1	2	≥ 30
PSD	---	0	0	30-60
PSD-P	---	0	0	5-10
Wr	---	102	127	---

[1] Sampling conducted in early-June
[2] Sampling conducted in early-August

Table 4. Stocking history including size and number for fishes stocked into North Scatterwood Lake, 2001-2011. WAE= walleye; YEP= yellow perch

Year	Species	Size	Number
2002	YEP	adult	3,320
2010	WAE	fry	1,000,000
	YEP	juvenile	3,200
2011	WAE	fry	500,000

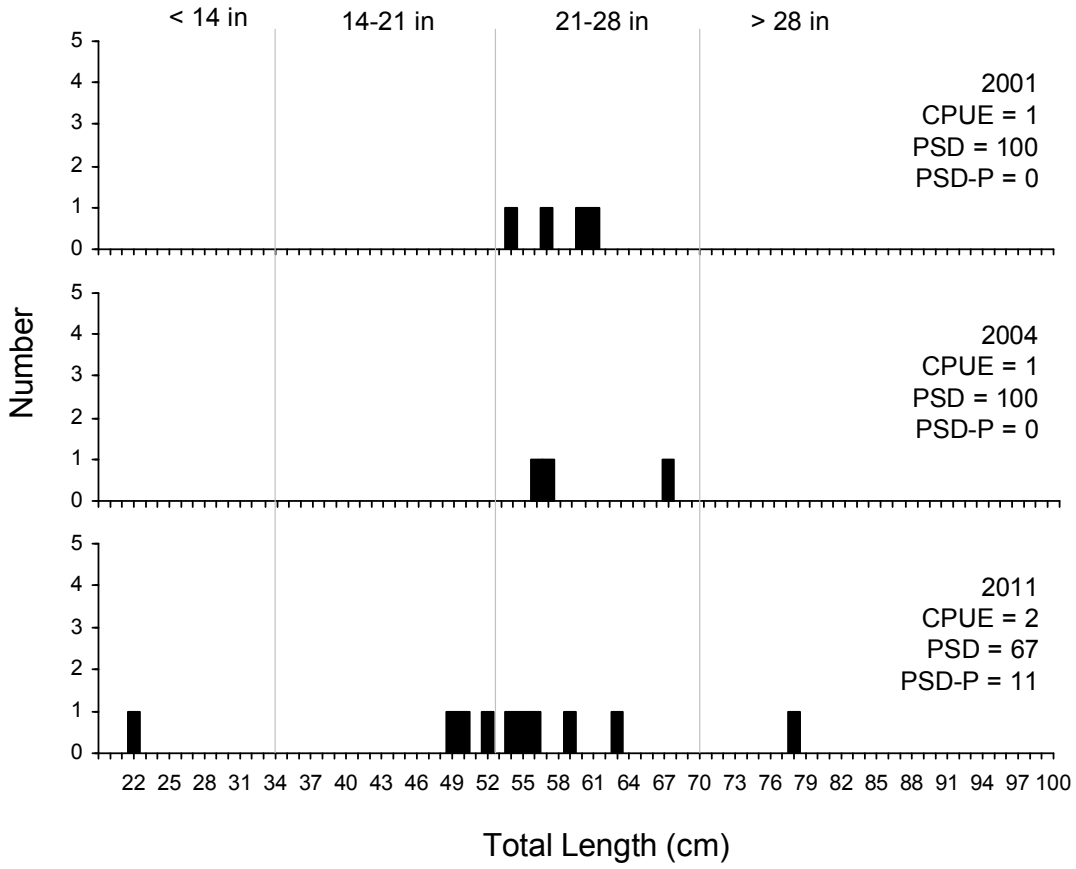

Figure 2. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish for northern pike captured using experimental gill nets in North Scatterwood Lake, 2001-2011.

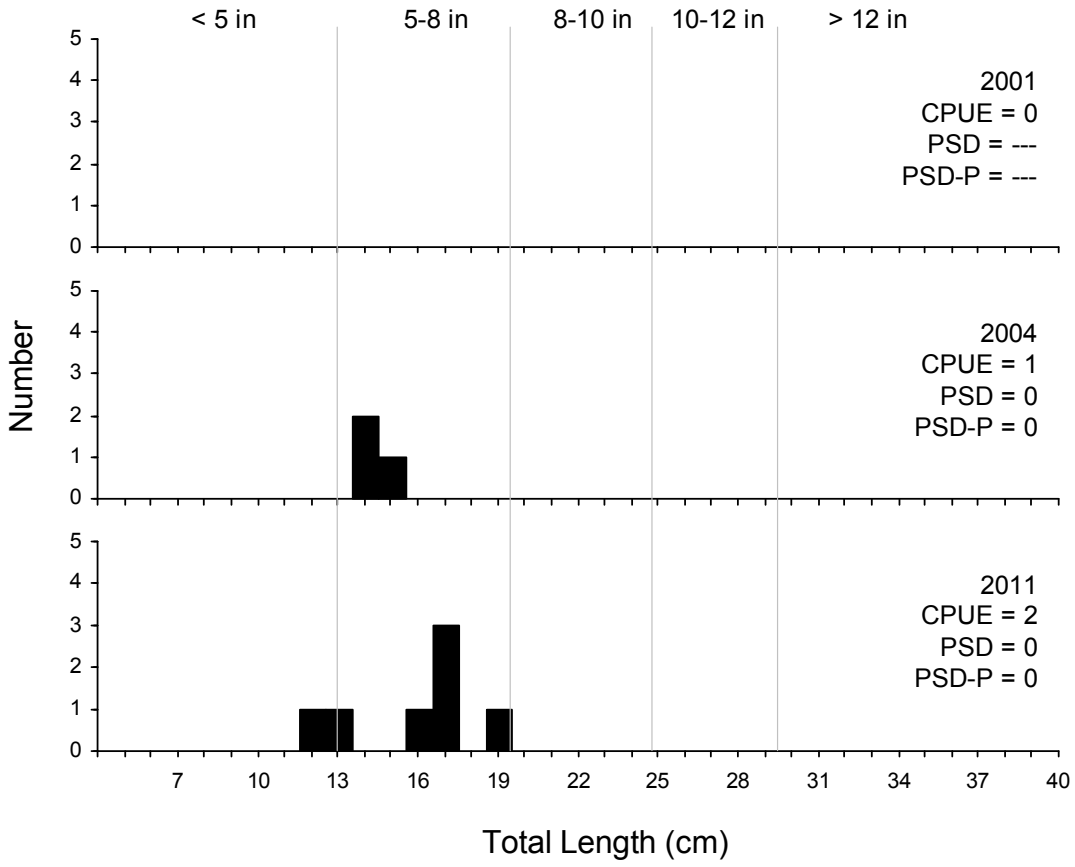

Figure 3. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish for yellow perch captured using experimental gill nets in North Scatterwood Lake, 2001-2011.

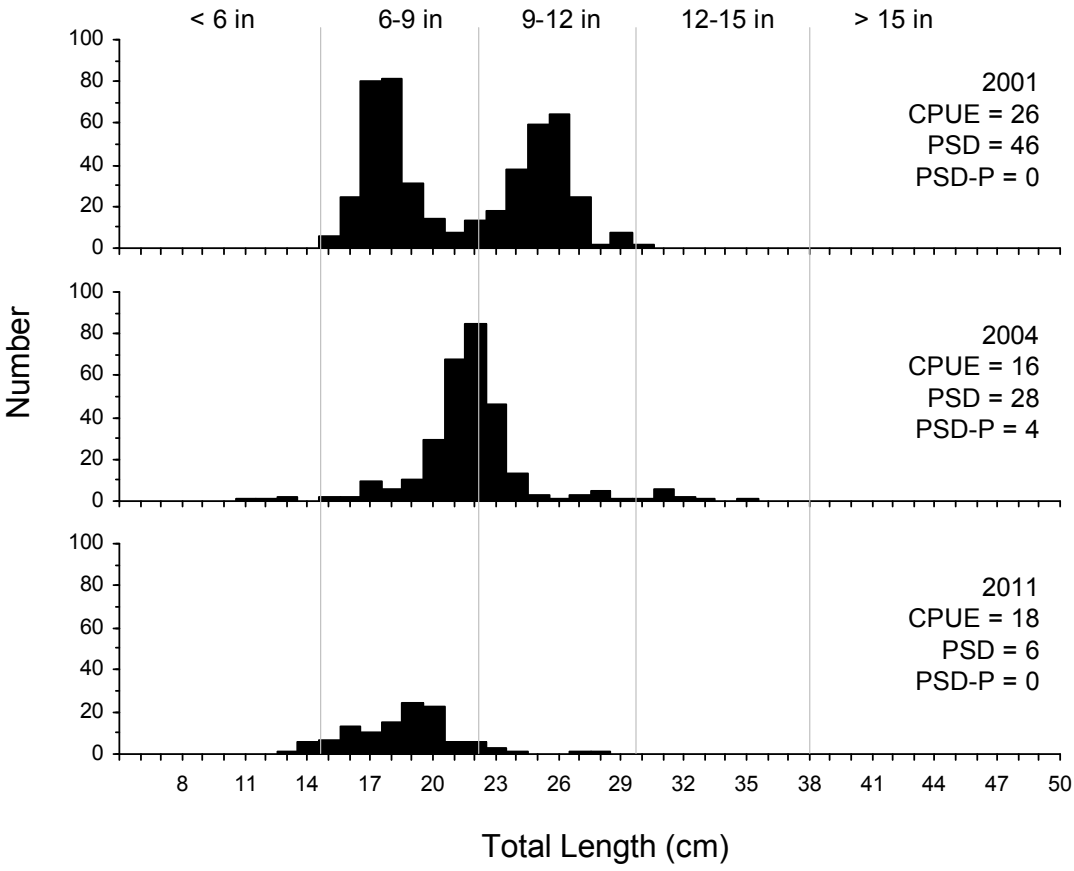

Figure 4. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish for black bullhead captured using frame nets in North Scatterwood Lake, 2001-2011.

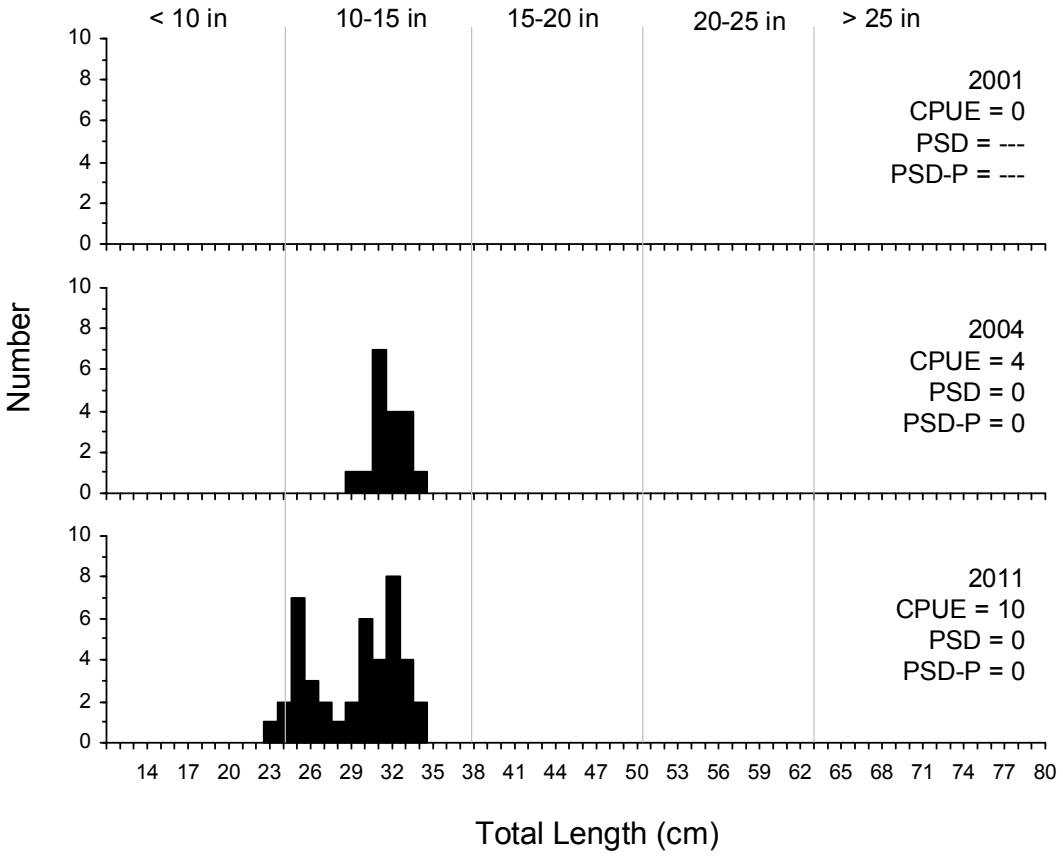

Figure 5. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish for walleye captured using experimental gill nets in North Scatterwood Lake, 2001-2011.