

## SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

2102-F21-R-47

**Name:** Coal Springs Lake

**County:** Perkins

**Legal description:** Sec 24, T 17N, R 16E

**Location from nearest town:** 3 mi. E, 6 mi. S, 3 mi. E, 1½ mi. S, and ½ mi. E of Meadow, SD

**Dates of present survey:** July 14-16, 2014

**Date last surveyed:** June 19-21, 2013

**Management classification:** Warmwater permanent

Primary Species: (game and forage)

Secondary and other species:

1. Largemouth bass
2. Walleye
3. \_\_\_\_\_

1. Northern pike
2. Yellow perch
3. Black bullheads

### PHYSICAL CHARACTERISTICS

**Surface Area:** 90.3 acres

**Watershed:** 6,400 acres

**Maximum depth:** 23 feet;

**Mean depth:** 12.1 feet

**Lake elevation at survey (from known benchmark):** - 4 feet from spillway

#### Ownership of lake and adjacent lakeshore property:

A portion of Coal Springs Lake lies within the southeast quarter of Section 24, which is owned by Perkins County. The remainder of the lake is located on private property. There is a public easement of 12 feet above the water's edge around the lake.

#### Fishing Access

Fishing access is limited as Coal Springs Lake is located in a pasture and is only accessible by driving across rough terrain. Shore fishing in the summer is also limited by heavy vegetation along the shoreline.

#### Observations of Water Quality and Aquatic Vegetation

Cattails occupy much of the shoreline. Submergent vegetation was extremely heavy in areas where light penetrates to the bottom.

#### Observations on condition of all structures, i.e. spillway, level regulators, boat ramps, etc.:

Coal Springs has no boat ramp. The dam and spillway were not inspected during the time of the survey.

## BIOLOGICAL DATA

### Sampling Effort and Catch

Sampling at Coal Springs Lake was completed using trap nets and experimental gill net on July 14-16, 2014 to sample adult fish populations in the reservoir. The net sampling consisted of eight trap net nights and two gill net nights (Figure 1). Catch data for both trap nets and gill nets is displayed in Tables 1 and 2. Discussion on selected fish species follows and completes this report.

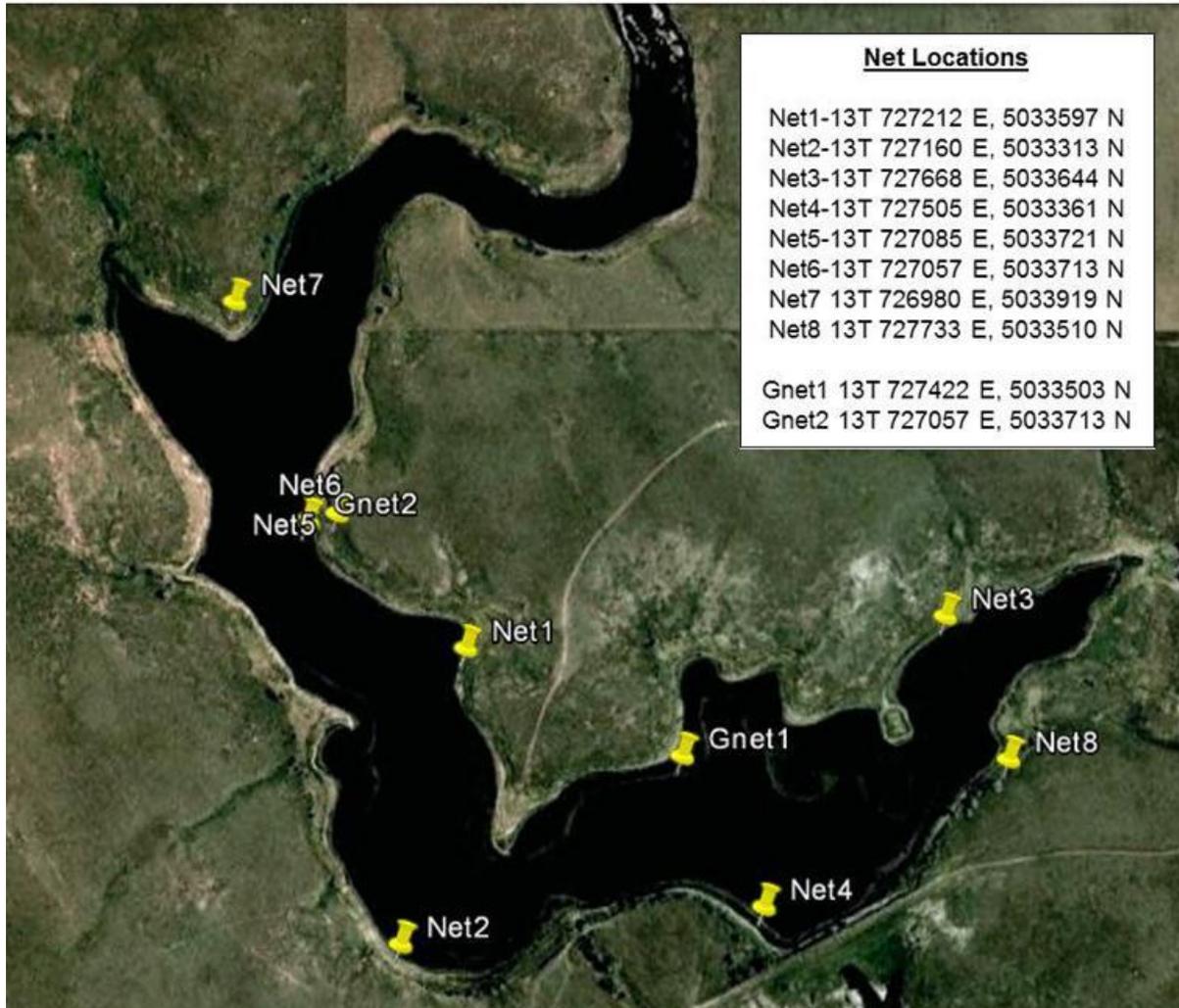


Figure 1. Map of Coal Springs Lake with historic net locations and GPS coordinates used during fish surveys. During the 2014 survey only trap net sites 1 through 4 (Net1, Net2, Net3 and Net4) were used.

Table 1. Catch data from all species collected in eight trap nets in Coal Springs Lake, Perkins County, July 14-16, 2014. CPUE's with 80% confidence intervals in parentheses. PSD, PSD-P and *Wr* with 90% confidence intervals in parentheses.

Species	N	CPUE	CPUE-S	PSD	PSD-P	<i>Wr</i> ≥ S
Black bullhead	1,177	147.1 (49.8)	37.6 (12.7)	100	0	89.1 (3.0)
Bluegill	17	2.1 (0.9)	2.0 (0.9)	81 (18)	75 (20)	126.0 (2.7)
Northern pike	64	8.0 (1.7)	8.0 (1.7)	23 (9)	0	66.1 (0.5)
Yellow perch	5	0.6 (0.7)	0.6 (0.7)	100	100	89.6 (9.7)

Table 2. Catch data from all species collected in two gill nets in Coal Springs Lake, Perkins County, July 14-16, 2014. CPUE's with 80% confidence intervals in parentheses. PSD, PSD-P and *Wr* with 90% confidence intervals in parentheses.

Species	N	CPUE	CPUE-S	PSD	PSD-P	<i>Wr</i> ≥ S
Black bullhead	92	46.0 (98.5)	46.0 (98.5)	98 (3)	0	96.0 (1.5)
Northern pike	7	3.5 (10.8)	3.5 (10.8)	43 (39)	0	70.0 (2.4)
Yellow perch	9	4.5 (7.7)	4.5 (7.7)	78 (28)	33 (31)	86.6 (4.5)

### Black bullhead

In 2013, CPUE for stock length and larger bullheads was 40.3, similar to this survey with a CPUE of 37.6 (Table 1). CPUE for all black bullheads was 147.1, which was much higher than last year when no sub-stock fish were sampled. All fish collected over stock length (150 mm) were also longer than quality length (230 mm). The length frequency histogram also shows a strong year class of age-1 bullheads (Figure 2).

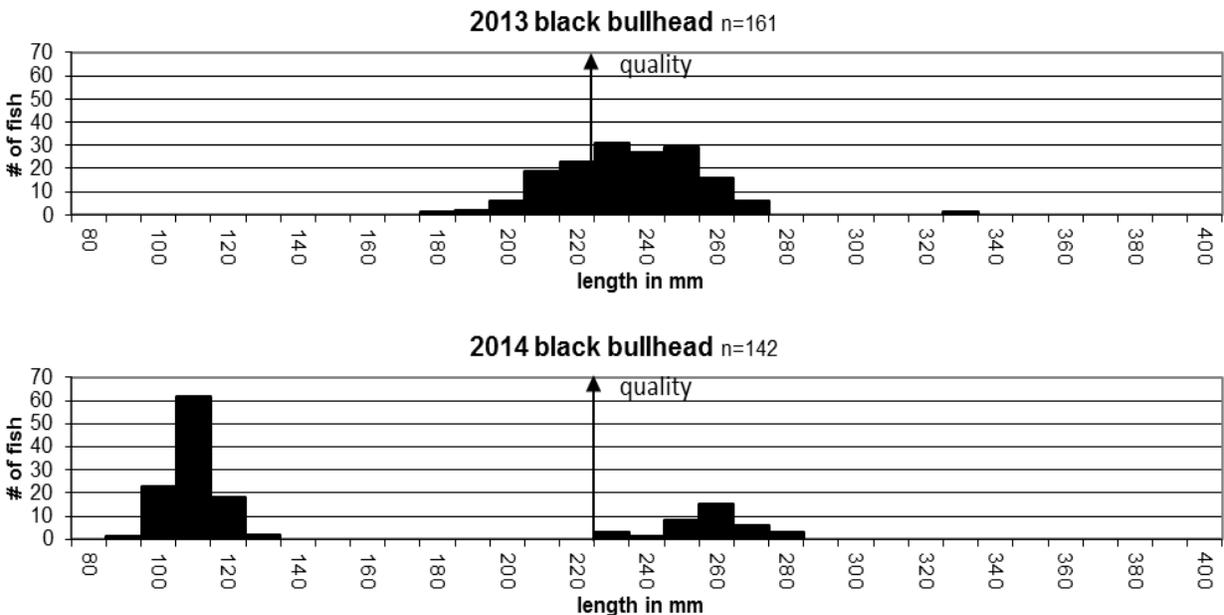


Figure 2. Length frequency histogram for black bullheads at Coal Springs Lake, 2013-2014.

## Bluegill

Bluegill were introduced in 2011 and appear to be reproducing and recruiting as a trap net CPUE of 2.1 was recorded (Table 1) and the length frequency histogram shows multiple year classes present (Figure 3). Fish condition was excellent with a *Wr* for stock length and larger fish of 126.0.

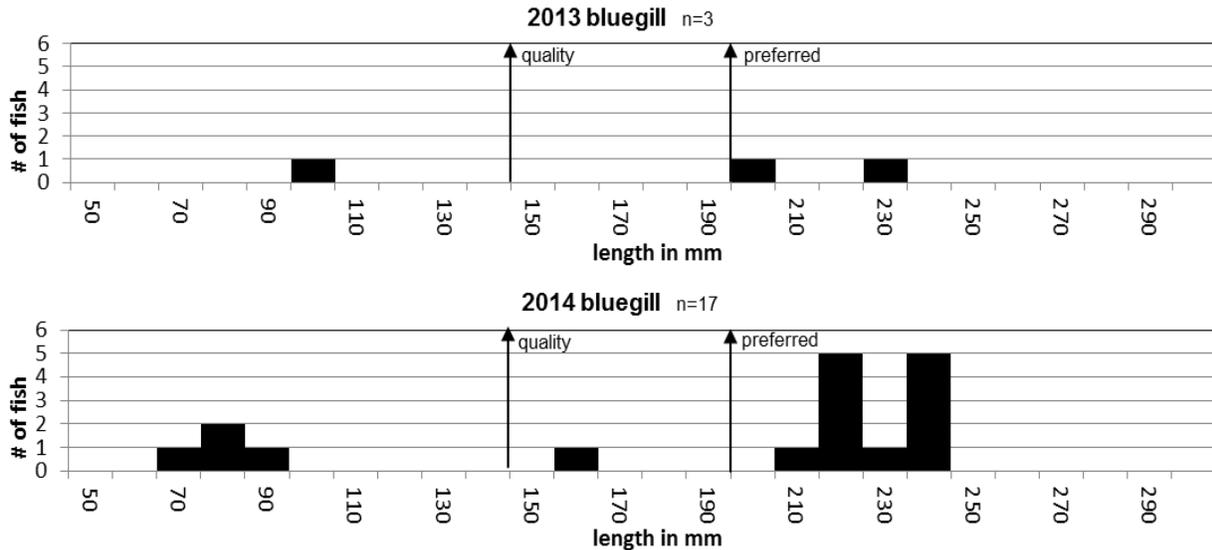


Figure 3. Length frequency histogram for bluegill at Coal Springs Lake, 2013-2014.

## Northern pike

Coal Springs Lake experienced very low water levels during the last drought and no northern pike have been stocked recently. Therefore, all fish caught during sampling are assumed to be naturally produced from a few adults that survived the drought. In the 2014 survey, the 2009 year class seems to be dominating the population (Figure 4). Catch rates were high with a trap net CPUE of 8.0 and a gill net CPUE of 3.5 (Tables 1 and 2). Last year, CPUE was 1.8 and 27.0, respectively. Fish condition is poor with a *Wr* for stock length and larger fish (from trap nets) of 66.1. These fish appear to be competing to find forage as growth seems very slow and average condition was poor.

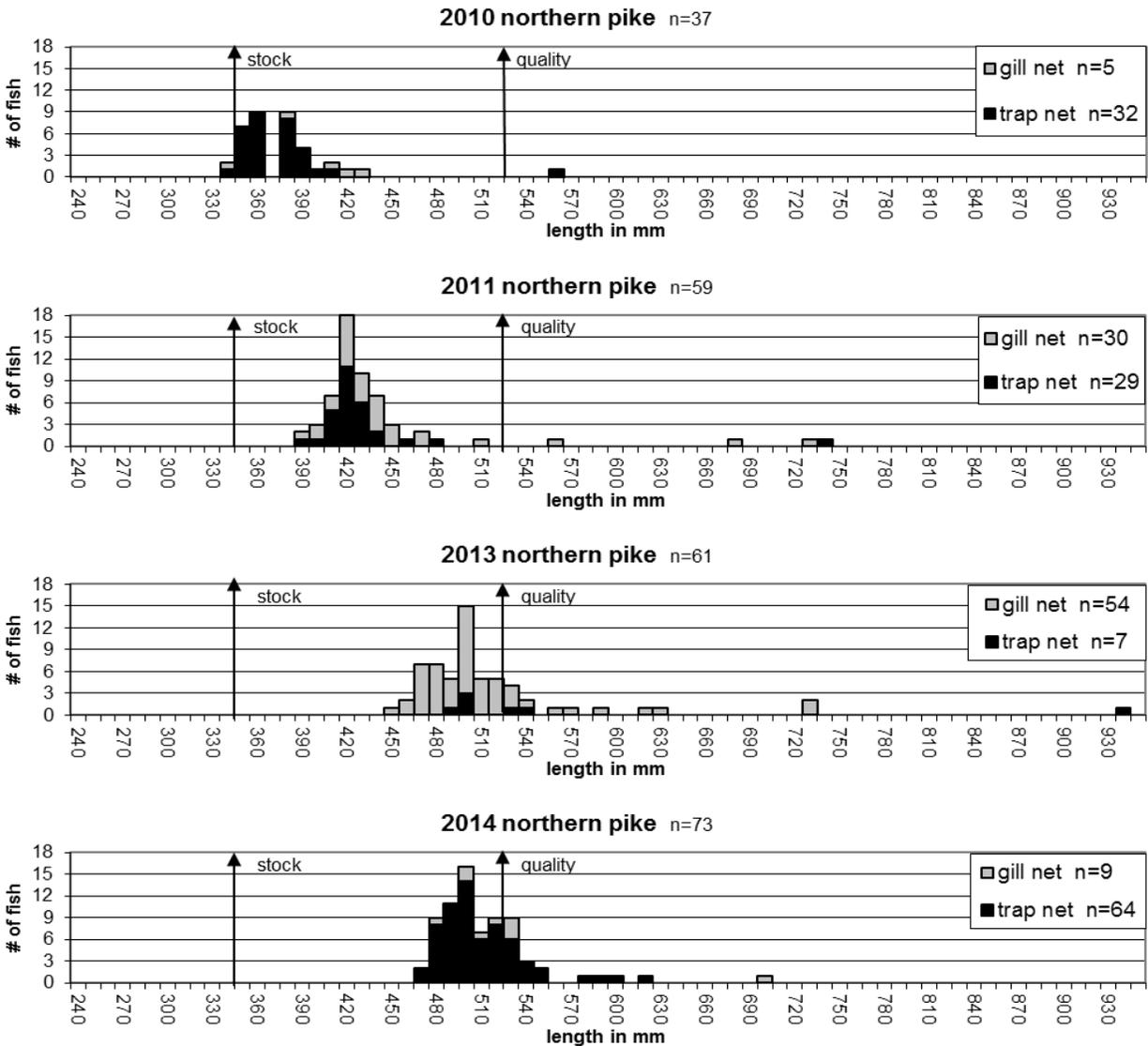


Figure 4. Length frequency histogram for northern pike from Coal Springs Lake, 2010-2011, 2013-2014.

### Yellow perch

In 2009 after the lake refilled, 1,000 adult yellow perch were stocked. It's possible the high northern pike density is keeping yellow perch numbers low with a gill net CPUE of 4.5 (Table 2). As expected with a low density population, growth was excellent, well above the state and regional average (Table 3). The length frequency histogram shows multiple year classes present (Figure 5).

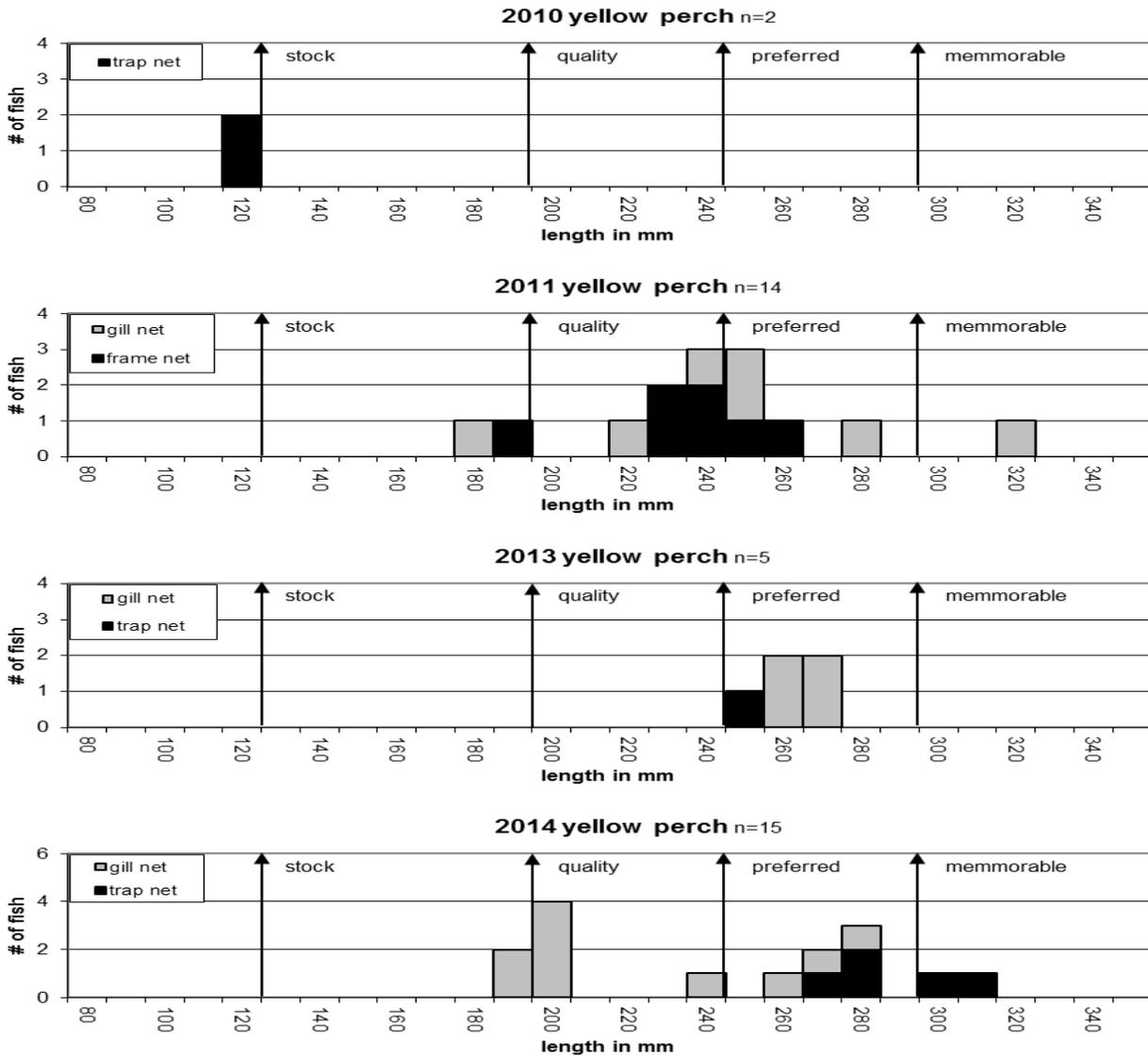


Figure 5. Length frequency histogram for yellow perch from Coal Springs Lake, 2010-2011, 2013-2014.

Table 3. Coal Springs Lake yellow perch year class, age in 2014, sample size (N), mean back-calculated total length-at-age, the Region 1 (western SD) mean length-at-age, and the South Dakota state-wide yellow perch mean length-at-age (Willis et al 2001). Standard errors are in parentheses.

Year Class	Age	N	1	2	3	4	5
2012	2	5	114	187			
2010	4	3	87	158	211	255	
2009	5	1	81	165	224	260	288
2014 Pop. mean (SE)		9	94 (10)	170 (9)	218 (6)	257 (3)	288 (0)
Region 1			70 (3)	117 (6)	158 (6)	186 (6)	208 (8)
South Dakota			86 (2)	145 (4)	190 (5)	220 (5)	242 (8)

## RECOMMENDATIONS

1. Stock adult yellow perch, bluegill and largemouth bass when available to reestablish fishery.
2. Resurvey in 2015 to check for success of recent stockings.

## LITERATURE CITED

Willis, David W. Daniel A. Isermann, Matthew J. Hubers, Bruce A. Johnson, William H. Miller, Todd R. St. Sauver, Jason S. Sorensen, and Eric G. Unkenholz. 2001. Growth of South Dakota Fishes: A Statewide Summary with Means by Region and Water Type. South Dakota Game, Fish and Parks Special Report. Pierre, SD

## APPENDIX

### **Appendix A.** Stocking record for Coal Springs Lake, Perkins County, 2002-2014.

Year	Number	Species	Size
2002	8,200	Largemouth bass	Fingerling
2004	430	Yellow perch	Adult
2009	350	Yellow perch	Adult
	650	Yellow perch	Adult
	40,100	Walleye	Fingerling
2010	8,200	Walleye	Fingerling
	5,000	Largemouth bass	Fingerling
2011	60	Golden shiner	Adult
	585	Yellow perch	Adult
	125	Bluegill	Adult
2012	470	Bluegill	Adult
	572	Yellow perch	Adult
	150	Largemouth bass	Adult
2014	1,592	Walleye	Large Fingerling