SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

2102-F21-R-48

Name: Rabbit Creek Dam **County:** Harding

Legal description: Sec. 32, T 17N, R 8E
Location from nearest town: 11 miles south of Reva
Dates of present survey: June 22-23, 2015
Date last surveyed: July 13-14, 2011
Management classification: Warmwater semi-permanent

Primary Species: (game and forage)	Secondary and other species:
1. Largemouth bass	1. Green sunfish
2. Black crappie	2. Golden shiner
3. Yellow perch	3.

PHYSICAL CHARACTERISTICS

Surface Area: 17 acres; **Watershed:** 2,560 acres
Maximum depth: 18 feet; **Mean depth:** NA
Lake elevation at survey (from known benchmark): full

Ownership of lake and adjacent lakeshore property:

Rabbit Creek Dam is owned by the United States Forest Service (USFS) and lies within the Custer National Forest. All land immediately around the reservoir is federally owned and under a grazing lease with a local rancher.

Fishing Access:

Rabbit Creek Dam lies along Highway 79. JB Road leads into the Slim Butte Area from Highway 79 and within the first 100 yards is a gravel/dirt trail approximately 0.2 miles long leading to the reservoir. The trail can be difficult during wet conditions but, parking along JB Road makes for only a short walk to the reservoir. No established trails exist around the reservoir, but access is fairly easy for walking. A few draws and emergent vegetation make access a little more challenging on the south side of the reservoir.

Observations of Water Quality and Aquatic Vegetative:

Cattails and bulrush are found around a large portion of the pond. No obvious pollution problems were noticed during the 2015 survey. Some shoreline sloughing has occurred due to wave action and cattle use indicating Rabbit Creek Dam and the Rabbit Creek watershed may have problems from siltation and other issues from past heavy grazing.

Observations on condition of structures (i.e. spillway, boat ramps, docks, roads, etc.)

The structures seem to be in good condition. There are no boat ramps or docks within this pond. During summer 2006 the dam, reservoir and inlet area were fenced to allow better managed grazing around the reservoir.

BIOLOGICAL DATA

Sampling Effort and Catch

The Rabbit Creek Dam fish population was surveyed June 22-23, 2015 using four trap nets, one gill net and 180 minutes of angling. Catch data for all 3 methods are in Tables 1 – 3. During the angling survey, lure size, type and color were varied in an attempt to collect multiple sizes of largemouth bass. Largemouth bass collected during angling were measured (TL; mm) and weighed (g), and scale samples were collected for age analysis.

Table 1. Catch data for fish species collected in trap nets at Rabbit Creek Dam, Harding County, June 22-23, 2015. 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	Wr≥S
Black crappie	6	1.5 (2.6)	1.5 (2.6)	100	67 (33)	103..3 (5.6)
Golden shiner	3	0.8 (1.5)	0.8 (1.5)	NA	NA	NA
Green sunfish	11	2.8 (5.0)	2.8 (5.0)	82 (22)	64 (28)	116.7 (3.4)
Largemouth bass	7	1.8 (3.7)	1.8 (3.7)	0	0	NA
Yellow perch	34	8.5 (13.4)	8.3 (13.4)	97 (5)	79 (12)	108.0 (0.5)

Table 2. Catch data for fish species collected in a single experimental gill net at Rabbit Creek Dam, Harding County, June 22-23, 2015. PSD, PSD-P and *Wr* with 90% confidence intervals in parentheses. (Golden shiners were not measured or weighed)

Species	N	CPUE	CPUE-S	PSD	PSD-P	Wr≥S
Golden shiner	21	21	NA	NA	NA	NA
Green sunfish	1	1	1	100	0	104.7 (--)
Largemouth bass	1	1	1	100	0	108.8 (--)
Yellow perch	11	11	10	100	70 (28)	110.9 (1.6)

Table 3. Catch data for largemouth bass collected by angling at Rabbit Creek Dam, Harding County, June 22-23, 2015. *Wr* with 90% confidence intervals in parentheses.

N	CPUE	CPUE-S	PSD	PSD-P	Wr≥S
17	5.7	1.0	100	0	100.9 (1.9)

Black crappie

There were few black crappie caught during the 2015 survey. This is a large change from catch in previous surveys (Table 4). Size structure was high with PSD of 100 and a PSD-P of 67. However, the lack of smaller sizes in the last two surveys (2011, 2015; Figure 1) is a concern. While the mean condition of the sampled fish is high (i.e. 103.3) it appears that the black crappie population is struggling to reestablish itself after the drought from 2004-2008.

Table 4. Catch data for black crappie sampled at Rabbit Creek Dam, Harding County, 2003, 2005, 2011 and 2015. Catch-per-unit effort is expressed with 80 % confidence intervals. Proportional stock density (PSD), relative stock density of preferred length fish (RSD-P), and relative weights (*Wr*) have 90% confidence intervals in parenthesis.

Year	CPUE	CPUE-S	PSD	PSD-P	*Wr*≥S
2003	34.3(24.4)	34(24.4)	97.79(1.47)	30.88(4.62)	NA
2005	36.6(11.4)	36.6(11.4)	98.98(0.97)	70.3(4.4)	94.76(0.7)
2011	14.8(2.8)	14.8(2.8)	33.90(10.38)	0	95.77(0.75)
2015	1.5 (2.6)	1.5 (2.6)	100	67 (33)	103..3 (5.6)

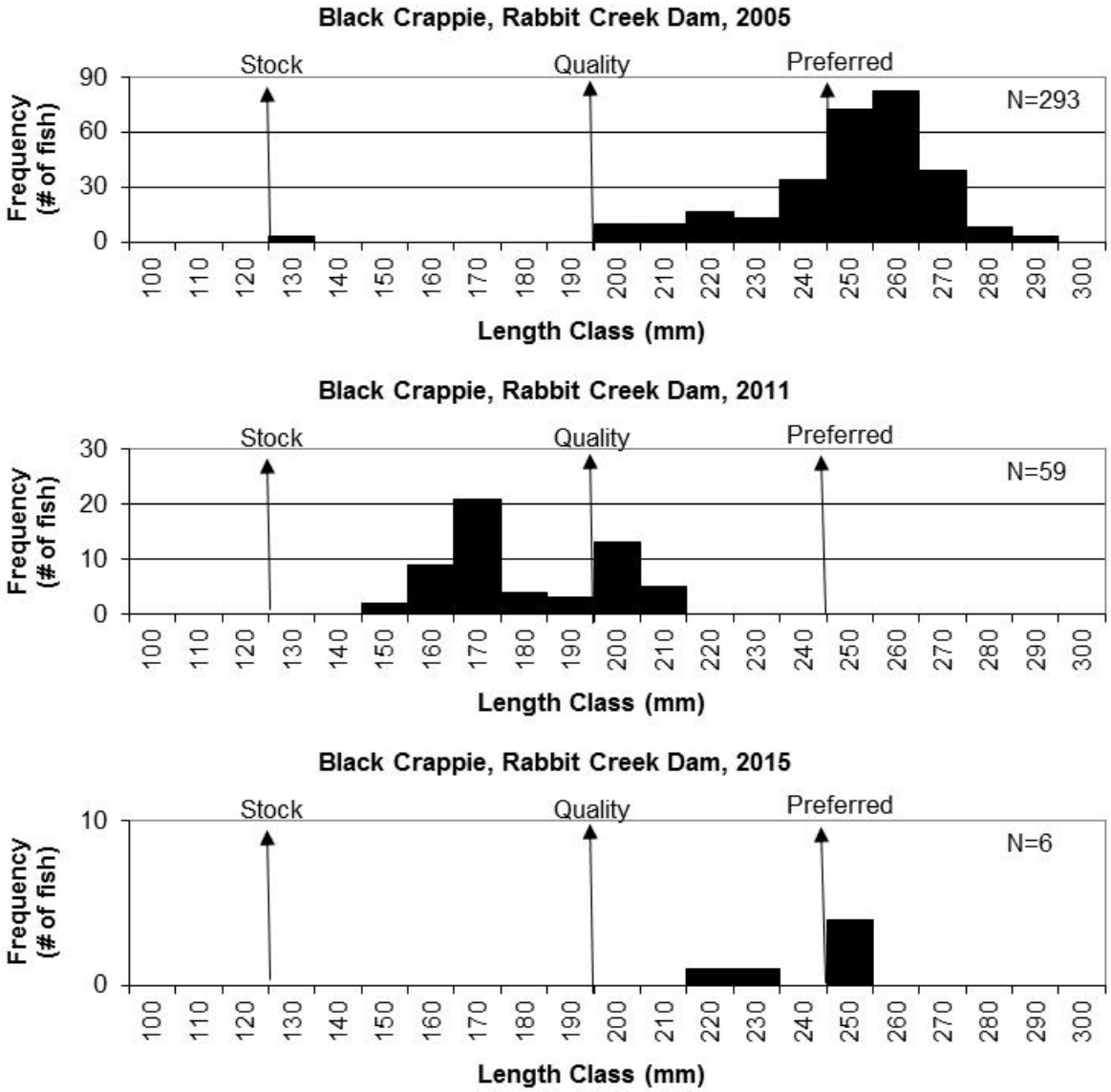

Figure 1. Length frequency histograms of black crappie surveyed from trap nets in Rabbit Creek Dam, Harding County, 2005-2015. (Frequency scales are not the same for each histogram.)

Yellow perch

Yellow perch were not very abundant during this survey and the population appears to have experienced a substantial drop in density since the 2011 survey (Table 5). Size structure is moving similar to the black crappie population with a high proportion of larger fish this year and few smaller fish caught during sampling (Figure 2). The lack of younger age classes is a concern for this population as well. Encouragingly, however, most of the sampled fish are over preferred length (250 mm).

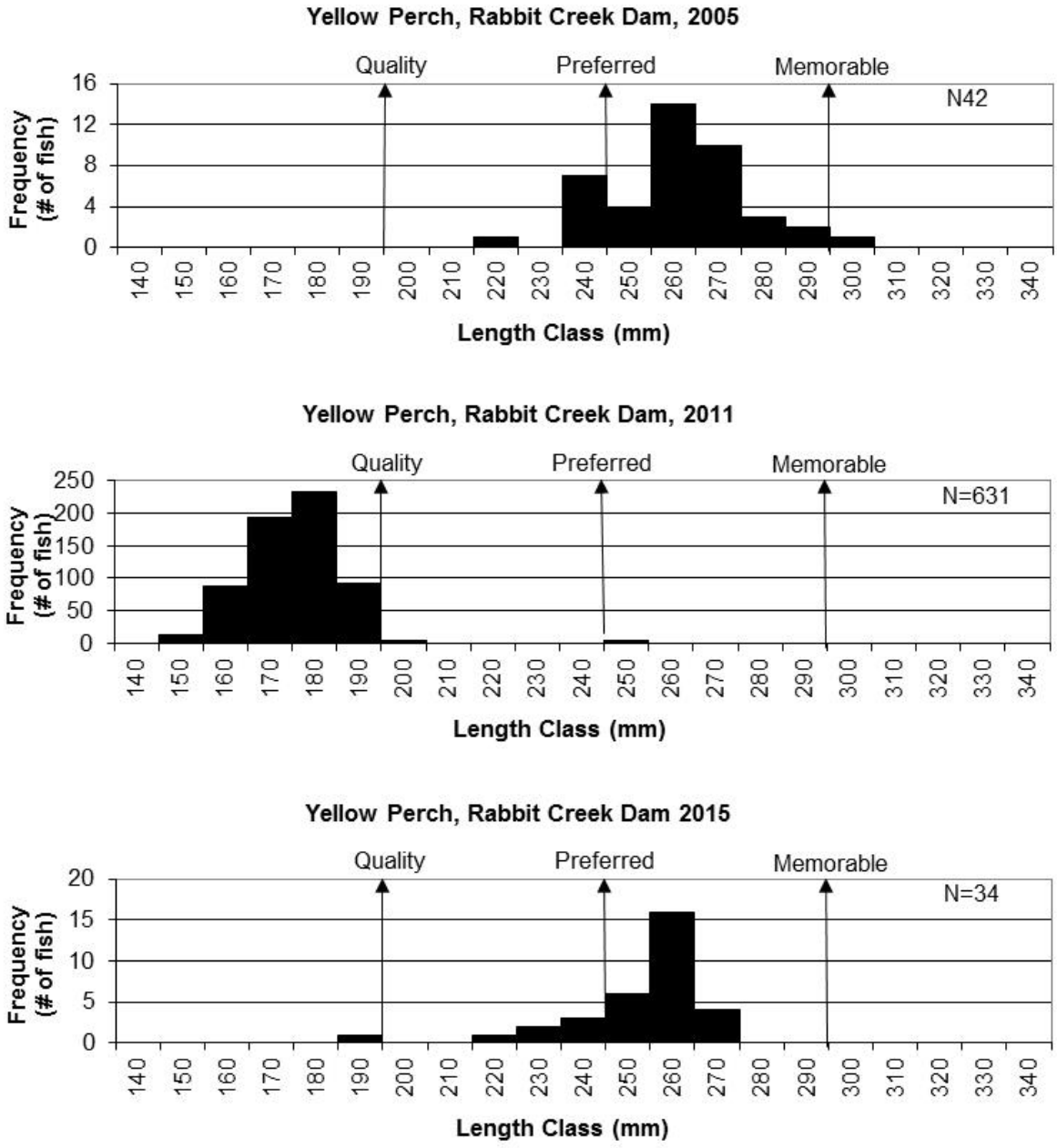

Figure 3. Length frequency histograms of yellow perch surveyed from trap nets in Rabbit Creek Dam, Harding County, 2005, 2011 and 2015 (Frequency scales are not the same for each histogram).

Table 5. Catch data for yellow perch sampled at Rabbit Creek Dam, Harding County, 2003, 2005, 2011 and 2015. Catch-per-unit effort is expressed with 80 % confidence intervals. Proportional stock density (PSD), relative stock density of preferred length fish (RSD-P), and relative weights (*Wr*) have 90% confidence intervals in parenthesis.

Year	CPUE	CPUE-S	PSD	PSD-P	*Wr*≥S
2003	13.3 (11)	13.3 (11)	98.11 (1.89)	75.47 (6.96)	NA
2005	5.3 (1.8)	5.3 (1.8)	100	80.95 (10.25)	108.67 (1.29)
2011	157.8 (72)	157.8 (72)	1.9(0.9)	0.95 (0.64)	92.69 (1.19)
2015	8.5 (13.4)	8.3 (13.4)	97 (5)	79 (12)	108.0 (0.5)

Largemouth bass

During three hours of angling, 17 largemouth bass were caught giving a catch rate of 5.6 bass/hour. Most of the largemouth bass measured from 120 mm to 170 mm with only three over stock length (Figure 5). Scale ages of the smaller bass showed them all to be age-1 fish (Table 6). The three larger bass were similar in size ranging from 310 mm to 325 mm and ranged from 5 to 7 years old (Table 6). The strong appearing age-1 year class is good to see and should provide a fishery for the next few years.

Table 6. Rabbit Creek Dam, Harding County, largemouth bass year class, age in 2015, 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 mean length-at-age (Willis et al 2001). Standard errors are in parentheses.

Year Class	Age	N	1	2	3	4	5	6	7
2014	1	14	118						
2010	5	1	73	112	145	220	308		
2008	7	1	68	122	168	215	248	269	322
2015 Pop. Mean (SE)		16	86 (16)	117 (5)	156 (11)	218 (2)	278 (30)	269 (0)	322 (0)
Region 1 Mean (SE)									
South Dakota Mean (SE)									

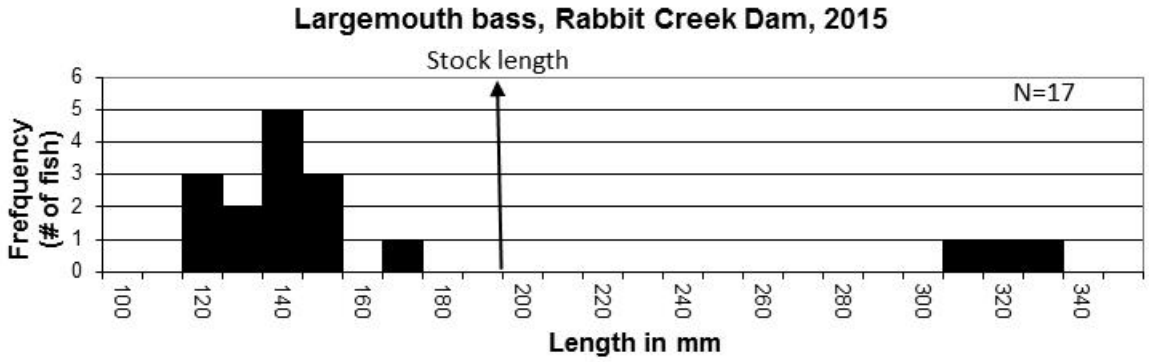

Figure 5. Length Frequency histogram for largemouth bass collected by angling from Rabbit Creek Dam, Harding County, 2015.

RECOMMENDATIONS

1. Survey the lake again within five years to determine changes in the fish populations.

2. Consider stocking adult black crappie to increase the density.

LITERATURE CITED

Willis, D.W., D.A. Isermann, M.J. Hubers, B.A. Johnson, W.H. Miller, T.R. St. Sauver, J.S. Sorenson, E.G. Unkenholz, and G.A. Wickstrom. 2001. Growth of South Dakota Fishes: A Statewide Summary with means by region and Water Type. Special Report. South Dakota Department of Game, Fish and Parks. Pierre, South Dakota.

APPENDIX

Appendix A. Rabbit Creek Dam stocking records.

Year	Species	Size	Number Stocked
1970	Rainbow trout	Fingerling	2,000
1971	Rainbow trout	Fingerling	4,000
1973	Bluegill	Adult	25
1978	Largemouth bass	Fingerling	1,500
	Black crappie	Adult	50
1982	Largemouth bass	Fingerling	1,000
1999	Rainbow trout	Fingerling	350
2001	Rainbow trout	Fingerling	750
2002	Rainbow trout	Fingerling	1,400
2008	Largemouth bass	Fingerling	1,700
2014	Largemouth bass	Fingerling	500