SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

2102-F21-R-47

Name: Little White River Project **County:** Bennett

Legal description: Sec 14 and 23, T 37N, R 36W
Location from nearest town: 2.5 mi W of Tuthill, SD
Dates of present survey: July 1-2, 28, 2014
Date last surveyed: July 8-9, 26, 2013
Management classification: Warmwater permanent

Primary Species: (game and forage)	Secondary and other species:
1. Black bullhead	1. Channel catfish
2. Black crappie	2. Common carp
3. Northern pike	3. White sucker
4. Walleye	4. Shorthead redhorse
5. Yellow perch	5. Tadpole madtom
6.	6. Largemouth bass

PHYSICAL CHARACTERISTICS

Surface Area: 111 acres Watershed: 130,000 acres
Maximum depth: 9 feet Mean depth: 4 feet
Lake elevation at survey (from known benchmark): -2 feet below spillway

Ownership of lake and adjacent lakeshore property:

The land surrounding the Little White River Project is owned by the South Dakota Department of Game, Fish and Parks and the US Fish and Wildlife Service. The area is managed as a Game Production Area and a recreation area.

Fishing Access

Fishing access at Little White River Project is fairly good for shore and boat anglers alike. Two boat ramps are available, although neither drop-off quickly and can pose difficulty launching. The newly installed concrete ramp (on the south side of the dam) receives heavy wind and wave action at times and is usually covered with large amounts of sand and sediment making the ramp even shallower. Cattails cover a substantial portion of the shoreline limiting fishing access for shore anglers, but open areas still exist for shore angling. Shore angling access is best along the dam grade which contains some of the deepest water in this shallow lake.

Observations of Water Quality and Aquatic Vegetative:

Sedimentation and consequently high turbidity occurs due to agricultural run off. No other pollution problems were identified by departmental personnel during the 2014 survey. Cattails surround much of the lake especially on the east and west shoreline. Turbid water keeps submergent vegetation to a minimum.

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

The lake was drained in 2006-2007 and a new dam, road and boat ramp constructed. These structures appear in excellent condition at this time. Wind and wave action do cover the boat ramp with sand and silt, reducing the grade and depth of the ramp.

BIOLOGICAL DATA

Sampling Effort and Catch

Age-0 Fish Survey

Daytime boat electrofishing was used on July 28, 2014 to index gizzard shad reproduction. Electrofishing was done using a boat mounted Smith-Root unit with pulsed-DC. Sampling consisted of five stations totaling 0.42 hours of electrofishing. A total of 644 young of year gizzard shad were collected (Table 1). No other age-0 fish were collected during this survey.

Procedure for sampling age-0 gizzard shad consists of five 10 minute sampling stations unless age-0 gizzard shad are collected within the first five minutes, then sampling is discontinued after five minutes of collection effort has been completed. All five sites produced age-0 gizzard shad within the first five minutes and total sampling effort was 1,500 sec (0.42 hr; Table 1). Collection at all five sites indicates good reproduction occurred and age-0 shad are located throughout the reservoir. Electrofishing will be completed annually for the next few years to determine if stocking gizzard shad continues to produce a forage source.

Table 1. Site number, number collected per site (No./Site), pedal time, and estimated number per hour of gizzard shad sampled using daytime electrofishing from Little White River Project, July 28, 2014.

Site	No./Site	Time (sec)	No./hr
1	37	300	444
2	454	300	5448
3	51	300	612
4	101	300	1,21.2
5	1	300	12
Total	644	0.42hr	1,533

Adult Fish survey

Trap nets and experimental gill nets were used on July 1-3, 2014 to sample adult fish populations in the reservoir (Figure 1). The net sampling consisted of eight trap net nights and two gill net nights and catch data is displayed in Tables 2 and 3. Discussion on selected fish species follows and completes this report.

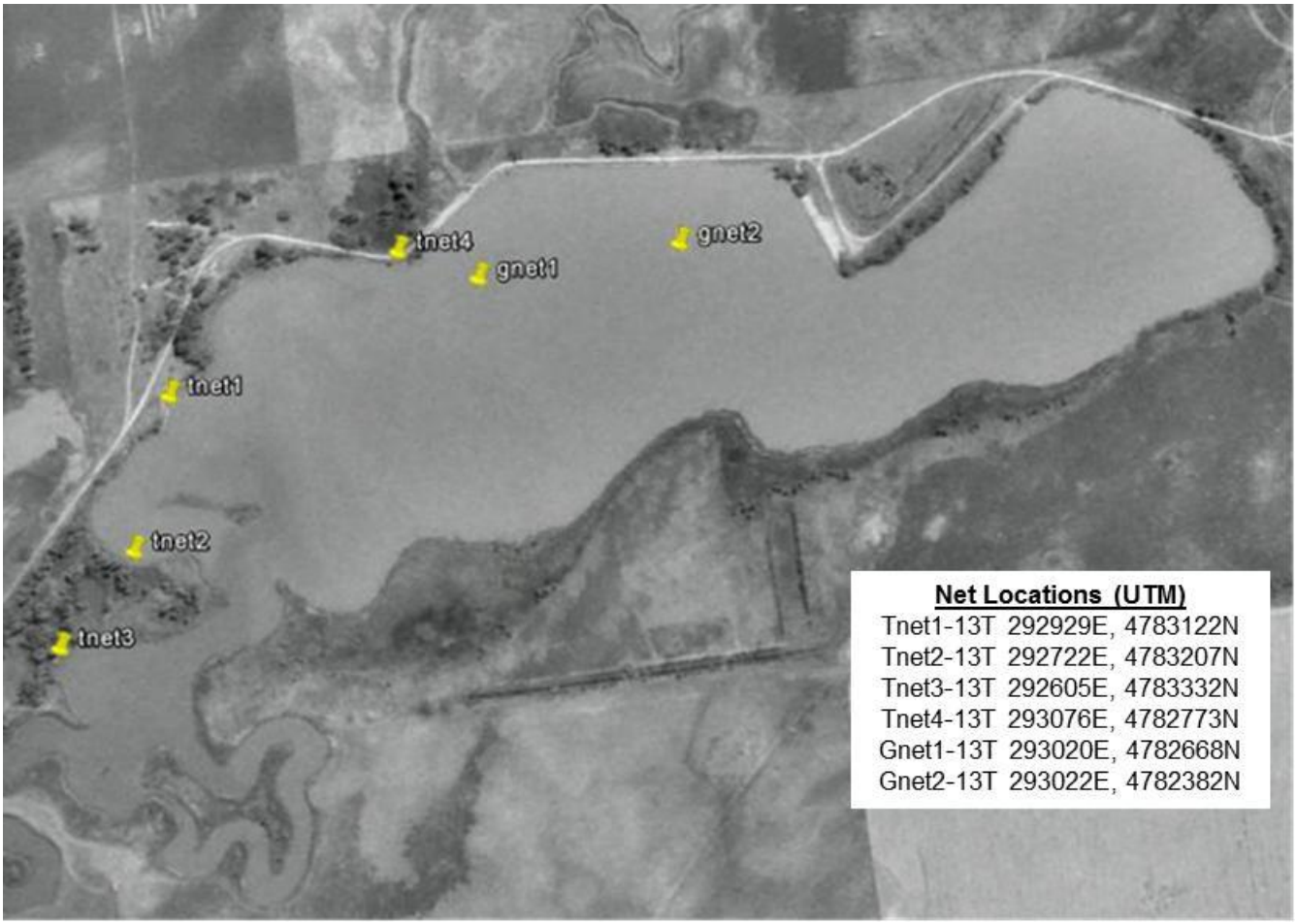

Figure 1. Map of Little White River Project with net locations with GPS coordinates from the 2014 lake survey.

Table 2. Catch data from all species collected in eight trap nets in Little White River Project on July 1-3, 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	*Wr* >S
Black bullhead	139	17.4 (7.9)	16.8 (7.8)	3 (2)	0	83.5 (1.6)
Black crappie	138	17.3 (2.8)	11.0 (3.3)	59 (9)	20 (8)	93.1 (0.2)
Channel catfish	1	0.1 (0.2)	0.1 (0.2)	--	--	101.9 (--)
Common carp	3	0.4 (0.3)	0.4 (0.3)	--	--	83.9 (8.0)
Green sunfish	3	0.4 (0.3)	0.4 (0.3)	--	--	111.0 (76.6)
Largemouth bass	3	0.4 (0.3)	0.4 (0.3)	--	--	96.1 (26.4)
Northern pike	9	1.3 (0.4)	1.3 (0.4)	80 (24)	30 (28)	88.9 (5.5)
Shorthead redhorse	7	0.9 (0.4)	0.9 (0.4)	--	--	88.4 (5.7)
Walleye	5	0.6 (0.4)	0.3 (0.2)	--	--	92.1 (30.3)
Yellow perch	1	0.1 (0.2)	0.1 (0.2)	--	--	91.9 (--)

Table 3. Catch data from species collected in two gill nets in Little White River Project on July 1-3, 2014. CPUE with 80%, and PSD, PSD-P and *Wr* with 90% confidence intervals in parentheses.

Species	N	CPUE	CPUE-S	PSD	PSD-P	*Wr* >S
Black bullhead	23	11.5 (1.5)	11.5 (1.5)	0	0	83.9 (1.4)
Black crappie	5	2.5 (1.5)	2.5 (1.5)	--	--	94.3 (5.9)
Channel catfish	3	1.5 (1.5)	1.5 (1.5)	--	--	95.1 (16.2)
Common carp	11	5.5 (10.8)	2.5 (7.7)	40 (52)	0	88.8 (5.0)
Northern pike	3	1.5 (1.5)	1.5 (1.5)	--	--	87.7 (18.0)
Shorthead redhorse	5	2.5 (1.5)	2.5 (1.5)	--	--	85.9 (8.2)
Walleye	11	5.5 (7.7)	5.0 (6.2)	60 (30)	10 (18)	86.2 (2.4)
Yellow perch	1	0.5 (1.5)	0.5 (1.5)	--	--	91.0 (--)

Black bullhead

Little White River Project continues to have a moderate density black bullhead population. Trap net CPUE was nearly the same as last year with a CPUE of 17.4 (Table 2) compared to 15.1 in 2013. Size structure shows a population dominated by small fish with a PSD of three. Also, length frequencies show a size structure very similar over the last three surveys (Figure 2).

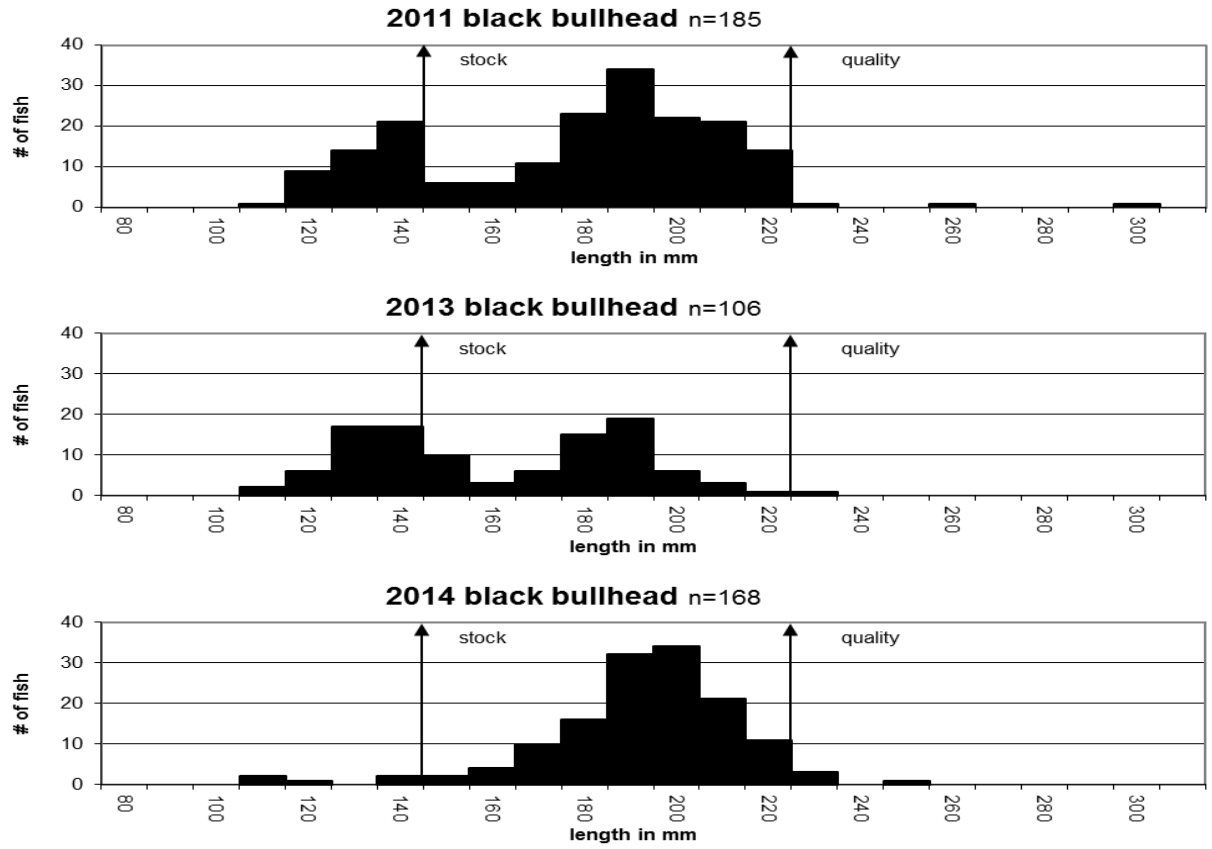

Figure 2. Length frequencies of black bullhead from trap nets at Little White River Project, 2011, 2013-2014.

Black crappie

Three-hundred-eighty-five black crappie were stocked in 2008 to re-establish the species after the lake refilled. CPUE during the 2009 trap net survey was 2.8. In 2011, the black crappie density had increased to a CPUE of 12.0. In 2013, it continued to increase with a CPUE of 17.3. This year, CPUE was identical at 17.3. Size structure indicates a balanced population with a PSD of 59 and a PSD-P of 20. The length frequency histogram also resembles a balanced population with good recruitment (Figure 3). Growth was excellent (Table 4).

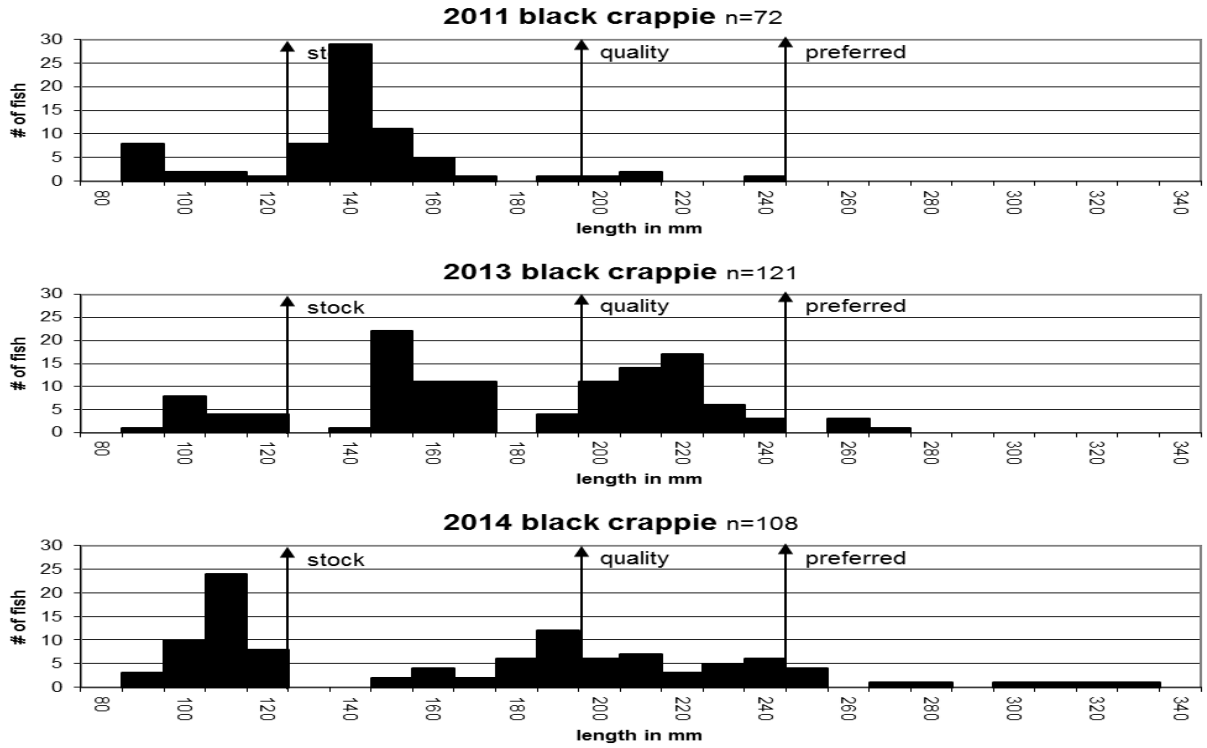

Figure 3. Length frequencies of black crappie from trap nets at Little White River Project 2011, 2013-2014.

Table 4**.** Little White River black crappie year class, age in 2014, sample size (N), mean back-calculated total length-at-age, the Region 1 mean length-at-age, and the South Dakota state-wide black crappie mean length-at-age (Willis et al 2001). Standard errors are in parentheses.

Year Class	Age	N	1	2	3	4	5	6
2013	1	47	81					
2012	2	1	60	111				
2011	3	39	90	128	178			
2010	4	10	73	140	173	207		
2009	5	26	81	151	195	223	251	
2008	6	3	78	151	188	243	275	304
2014 Pop. mean (SE)		126	77(4)	136 (8)	183 (5)	224 (10)	263 (12)	304 (0)
Region 1			74 (3)	122 (7)	158 (9)	197 (13)	217 (16)	
South Dakota			83 (2)	147 (4)	195 (5)	229 (6)	249 (6)	

Northern pike

Northern pike density remains low with a trap net CPUE of 1.3 (Table 2), compared to 2.9 last year (Table 2). Stock density was high with a PSD of 80 and a PSD-P of 30. The length frequency histograms show a large size distribution of pike that has been fairly common in recent years (Figure 4).

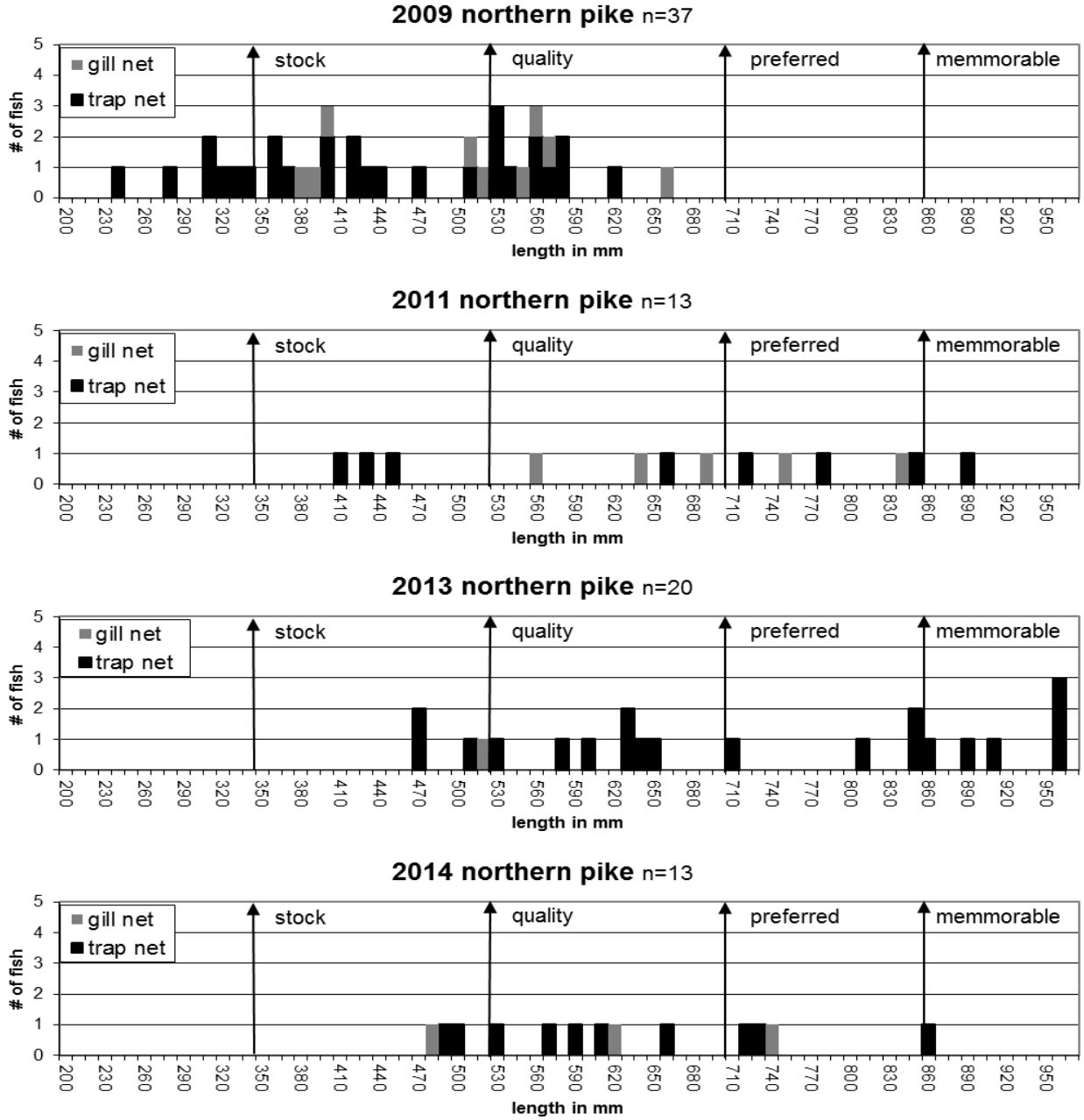

Figure 4. Length frequencies of northern pike from trap nets and gill nets at Little White River Project, 2009, 2011, 2013-2014.

Walleye

Walleye abundance remains fairly low, but higher than recent years, with a gill net CPUE of 5.5 (Table 3). Last year, CPUE was 2.0 and in 2011 it was 3.0. Fish growth is excellent well above the state and regional average (Table 5). The length frequency histogram shows several year classes present but not in great number (Figure 5). Fish condition was average with a *Wr* for stock length and larger fish of 86.2.

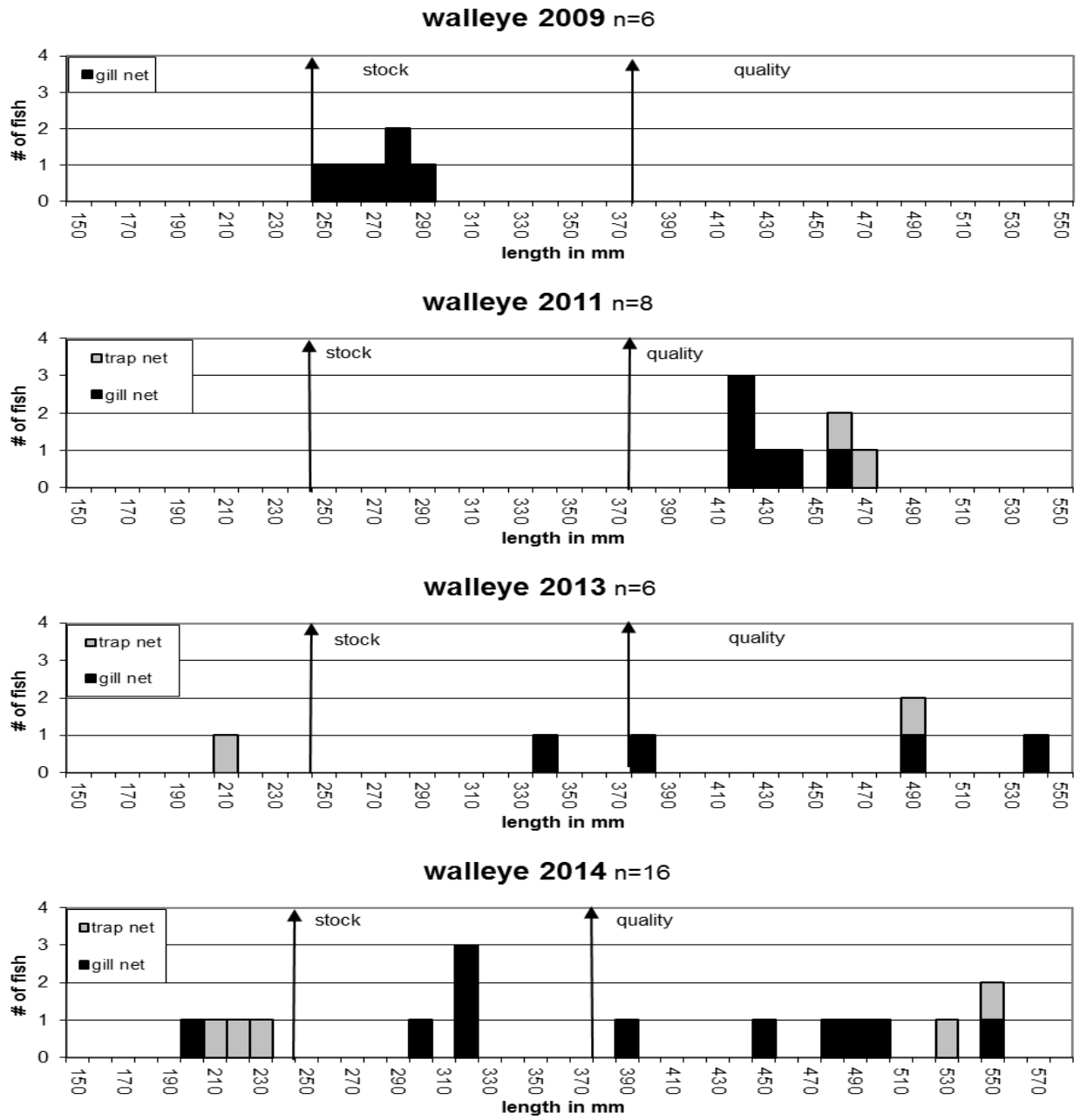

Figure 5. Length frequency histogram for walleye from gill nets at Little White River Project, in 2009 and gill nets and trap nets in 2011 and 2013-2014.

Table 5**.** Little White River walleye 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 walleye mean length-at-age (Willis et al 2001). Standard errors are in parentheses.

Year Class	Age	N	1	2	3	4	5	6
2013	1	1	196					
2012	2	4	176	312				
2011	3	2	185	333	451			
2010	6	4	225	378	438	473	510	537
2014 Pop. mean (SE)		11	196 (11)	341 (19)	445 (6)	473 (0)	510 (0)	537 (0)
Region 1			164 (17)	260 (22)	332 (27)	385 (32)	444 (42)	
South Dakota			168 (3)	279 (6)	360 (7)	425 (8)	490 (9)	

RECOMMENDATIONS

1. Double the stocking rate of small walleye fingerlings in Little White River Project.

2. Keep stocking adult gizzard shad as a forage species for walleye and other game fish in Little White River Project.

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. Stocking record for Little White River Project, Bennett County, 2003-2014.

Year	Number	Species	Size
2003	20,540	Walleye	Fingerling
2004	334	Northern pike	Adult
2008	800	Channel catfish	Adult
	1,710	Yellow perch	Adult
	385	Black crappie	Adult
	420,000	Northern pike	Fry
	20,800	Walleye	Fingerling
	3,000	Largemouth bass	Fingerling
2009	20,000	Largemouth bass	Fingerling
2012	25	Gizzard shad	Adult
	20,304	Walleye	Fingerling
	4,500	Largemouth bass	Fingerling
2013	32	Gizzard shad	Adult
	22,626	Walleye	Fingerling
2014	20,000	Walleye	Fingerling
	30	Gizzard shad	Adult