SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

2102-F21-R-48

Name: Flat Creek Lake **County**: Perkins

Legal description: Sec 20 & 21, T 21N, R 16E
Location from nearest town: 0.5 mi. west, 10 mi. south of Lemmon, SD
Dates of present survey: May 26-27, 2015
Date last surveyed: June 23-25, 2014
Management classification: Warmwater semi-permanent

Primary Species: (game and forage)	Secondary and other species:
1. Black bullhead	1. Channel catfish
2. Black crappie	2. Common carp
3. Walleye	3. Golden shiner
4. Northern pike	4. Bluegill
5. Yellow perch	5. White crappie

PHYSICAL CHARACTERISTICS

Surface Area: 203.4 acres **Watershed:** 102,400 acres
Maximum depth: 24 feet **Mean depth:** 7.9 feet
Lake elevation at survey (from known benchmark): full

Ownership of lake and adjacent lakeshore property:

Flat Creek Lake is divided by Highway 73. Approximately 50% of the shoreline is public and the rest is in private ownership. The south west side is owned by the South Dakota Game Fish and Parks (SDGFP) and lies within the Llewellyn Johns Recreation Area. The SDGFP obtained easements in 1934 that grants public access around the shoreline up to 12 feet above the high water mark.

Fishing Access:

Flat Creek Lake has poor access except along Highway 73. Other shoreline areas are overgrown with thick vegetation including large areas of poison ivy. Boat access is also poor. Small boats can be launched on the southwest corner of the east half of the lake at a break in the shoreline vegetation. This area has large amounts of poison ivy on both sides, so boat anglers need to be wary when on shore.

Observations of Water Quality and Aquatic Vegetation:

Cattails and bulrush surround most of the shoreline areas on both sides of the highway. Department personnel identified no pollution problems during the 2015 survey.

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

The dam and spillway were not inspected by SDGFP fisheries personnel during the 2015 survey.

MANAGEMENT OBJECTIVES

Objective 1. Increase walleye density to produce and maintain a gill-net CPUE for stock-length walleye ≥ 10, and a PSD range of 30-60.

Objective 2. Increase and maintain a moderate to high density of largemouth bass with PSD range between 20 and 40.

Objective 3. Maintain a mean trap net CPUE of stock-length black bullhead ≤ 100 and PSD between 30 and 60.

BIOLOGICAL DATA

Sampling Effort and Catch

Trap nets and gill nets were used on May 26-27 to sample adult fish populations in the reservoir. The net sampling consisted of eight trap net nights and four gill net nights and catch data is displayed in Tables 1 and 2. Eight different species were collected with 702 fish collected from the trap nets and 71 fish from the gill nets. Discussion on selected fish species follows and completes this report.

Table 1. Catch data from all fish species collected in eight trap nets in Flat Creek Lake, Perkins County, May 26-27, 2015. 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	641	80.1 (18.8)	80.1 (18.8)	0	0	76.9 (0.9)
Black crappie	4	0.5 (0.4)	0.5 (0.4)	100	0	97.3 (0.0)
Common carp	39	4.9 (3.2)	4.9 (3.2)	0	0	85.1 (0.4)
Northern pike	4	0.5 (0.7)	0.5 (0.7)	100	50 (50)	83.7 (9.6)
Walleye	9	1.1 (0.3)	1.0 (0.3)	63 (35)	25 (31)	86.7 (4.3)
White crappie	3	0.4 (0.4)	0.4 (0.4)	100	100	99.7(16.8)
White sucker	1	0.1 (0.2)	0.1 (0.2)	0	0	92.3 (--)
Yellow perch	1	0.1 (0.2)	0.1 (0.2)	0	0	93.7 (--)

Table 2. Catch data from all fish species collected in two gill nets in Flat Creek Lake, Perkins County, May 26-27, 2015. CPUE 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	47	23.5 (10.8)	23.5 (10.8)	0	0	88.2 (1.4)
Common carp	15	7.5 (1.5)	7.5 (1.5)	7 (9)	7 (9)	88.4 (1.5)
Northern pike	4	2.0 (3.0)	2.0 (3.0)	75 (59)	75 (59)	96.8 (4.4)
Walleye	3	1.5 (4.5)	0.5 (1.5)	0	0	79.9 (--)
White sucker	2	1.0 (--)	1.0 (--)	0	0	84.6 (16.6)

Black bullhead

Black bullhead continue to be the most abundant fish species collected during fishery surveys on Flat Creek Lake (Tables 1 and 2). Over the past five years, catch ranged from 43 to 104 fish per trap net (Table 3). The number of larger fish remains low with few or no fish growing to over quality length (Figure 1). Low condition (i.e. *Wr* = 76.9) also indicates there may be an overabundance of black bullhead in this lake. While catch rates meet management objectives, size structure does not. The latest black bullhead management objective of a PSD between 30 and 60 is not being met and it appears growth of fish from a large year class has slowed, resulting in few fish over quality size. Likely, more predators need to be moved into this lake to improve growth of black bullhead.

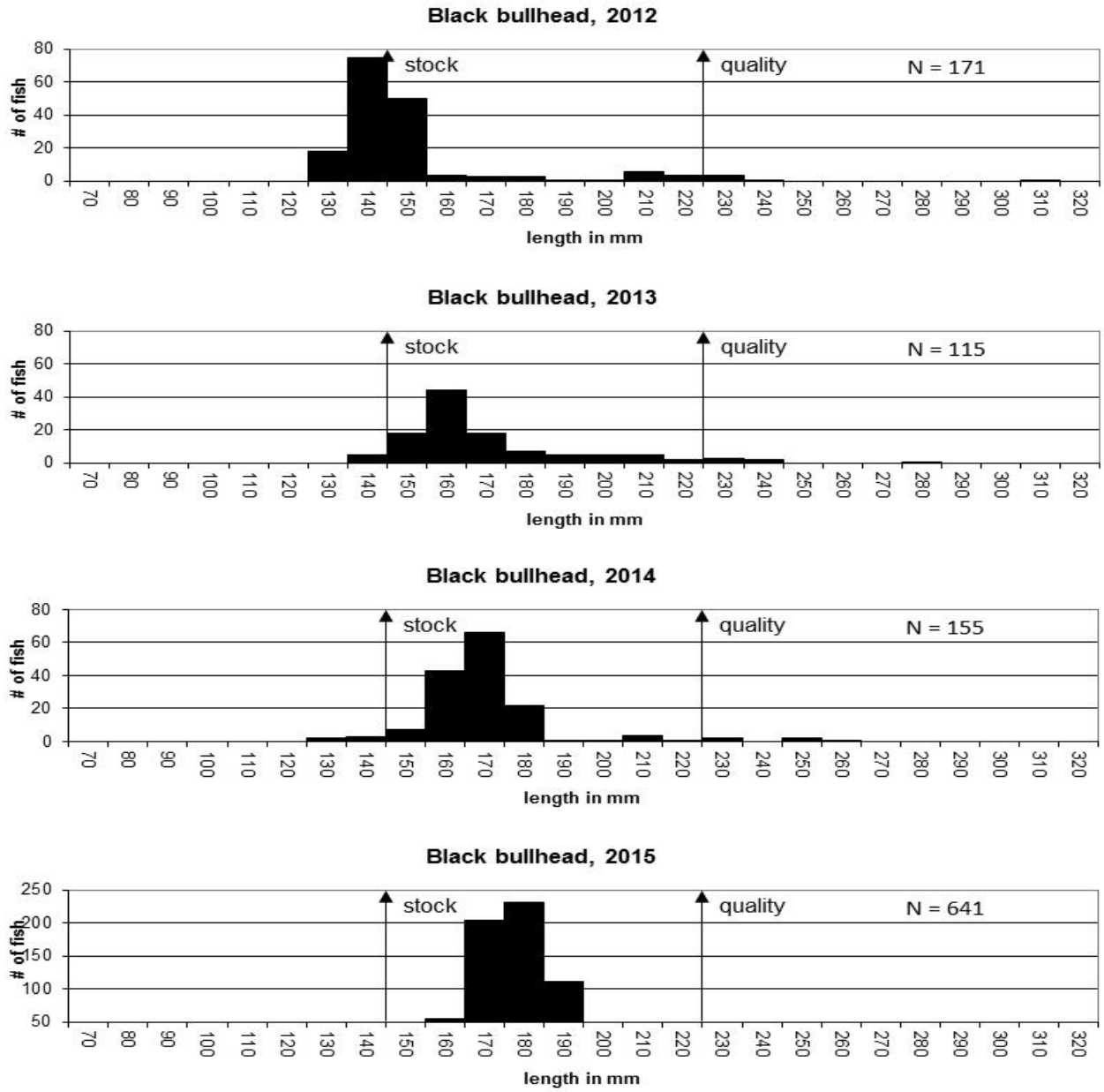

Figure 1. Length frequency histograms of black bullhead from trap nets in Flat Creek Lake, Perkins County, 2012-2015.

Table 3. Composite listing of data for black bullhead collected by trap nets in Flat Creek Lake, Perkins County, 2010, 2012-2014. CPUE's with 80% confidence intervals in parentheses. PSD, PSD-P and *Wr* with 90% confidence intervals in parentheses.

Year	CPUE	PSD	PSD-P	*Wr* ≥ S
2012	42.8 (46.9)	8 (5)	1 (2)	79.7 (1.1)
2013	103.5 (51.2)	5 (2)	0	87.1 (1.3)
2014	65.8 (24.6)	2 (1)	0	74.8 (1.1)
2015	80.1 (18.8)	0	0	76.9 (0.9)

Common carp

Common carp were the second most abundant fish species captured in both the gill nets and trap nets during the 2015 survey (Tables 1 and 2). No common carp were aged but length frequencies over the past four years indicate there is a single strong year class in the lake with few fish outside of this group (Figure 2).

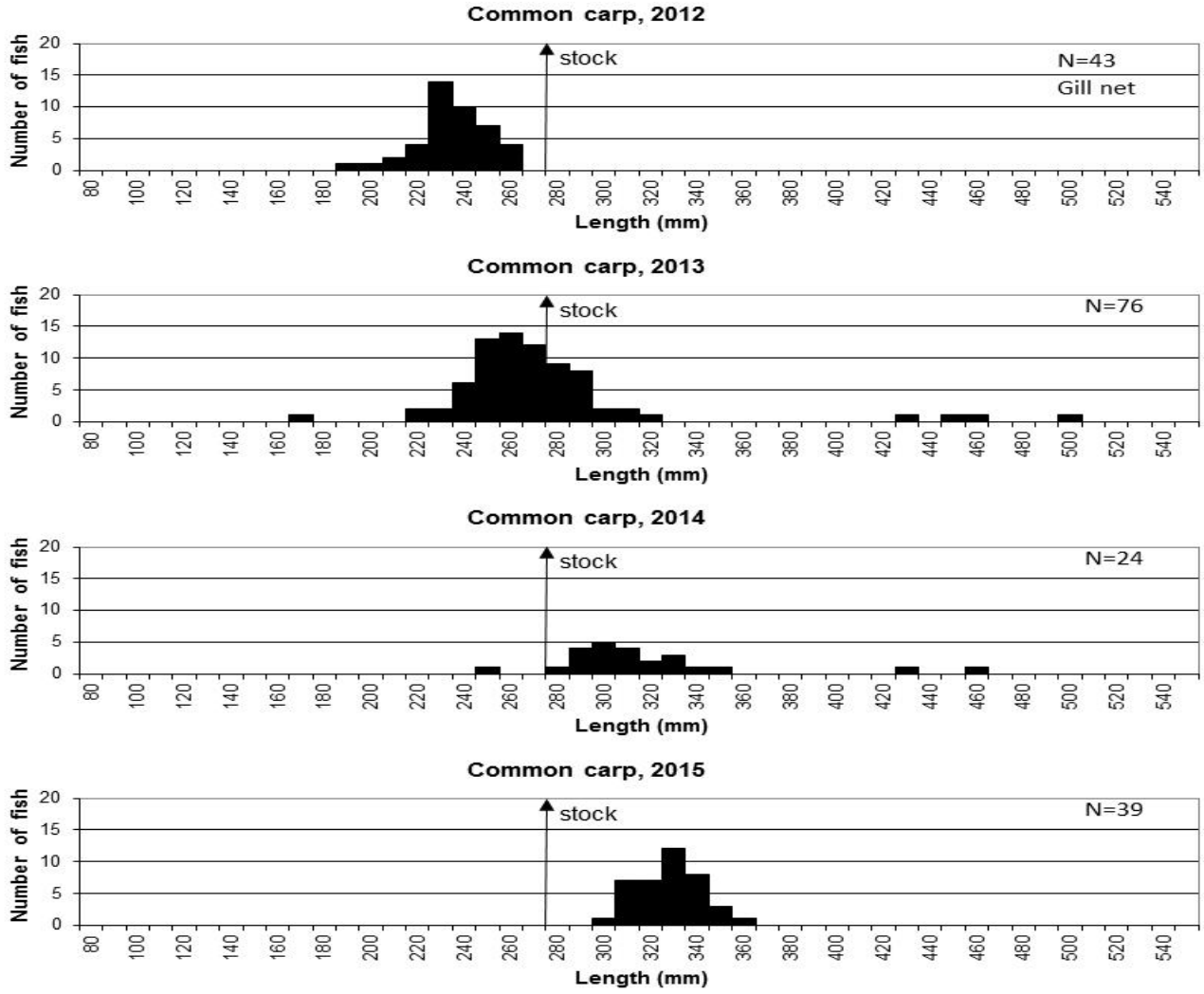

Figure 2. Length frequency histograms of common carp in Flat Creek Lake, Perkins County, 2013-2015.

Northern pike

A total of only eight northern pike were caught during the 2015 survey with four in the trap nets and four in the gill nets (Tables 1 and 2). Except for one in the gill net, all of the northern pike were over quality length with three of the sampled fish pike over the memorable length of 34 inches (Figure 3). The northern pike appear to be healthy with mean condition values for fish over 350 mm (*Wr*≥S) at 97 in gill nets.

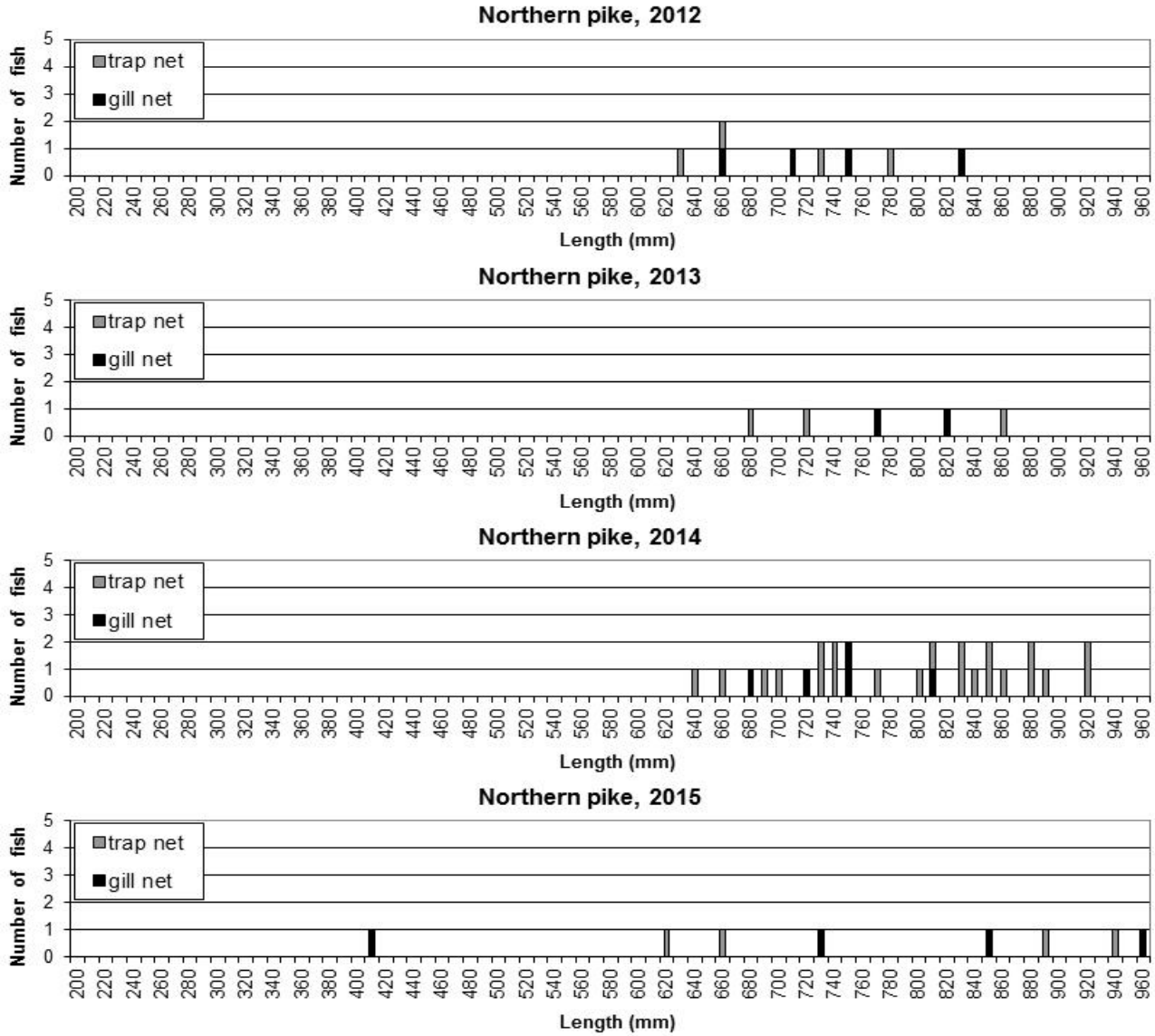

Figure 3**.** Length frequency histograms for northern pike from gill nets and trap nets in Flat Creek Lake, Perkins County, 2012-2015.

Walleye

Only 12 walleye were captured in the 2015 survey (Tables 1 and 2). Condition was low with mean *Wr* values for stock length and longer walleyes of 86.7 in the trap nets and 79.9 in the gill nets. Walleye from multiple length categories were collected, indicating that stockings and/or natural reproduction are adding to the population (Figure 4). However, the 2 fish sample at 120 mm are likely age-1 fish which would be very slow growth for young walleye and possibly a factor in the lack of larger numbers of young walleye surviving their first winter. Management objectives for walleye CPUE-S are not being met as the gill net CPUE-S is less than 10. Adding additional forage (such as gizzard shad) that could benefit young walleyes might improve survival and, therefore, improve densities of walleye in this reservoir.

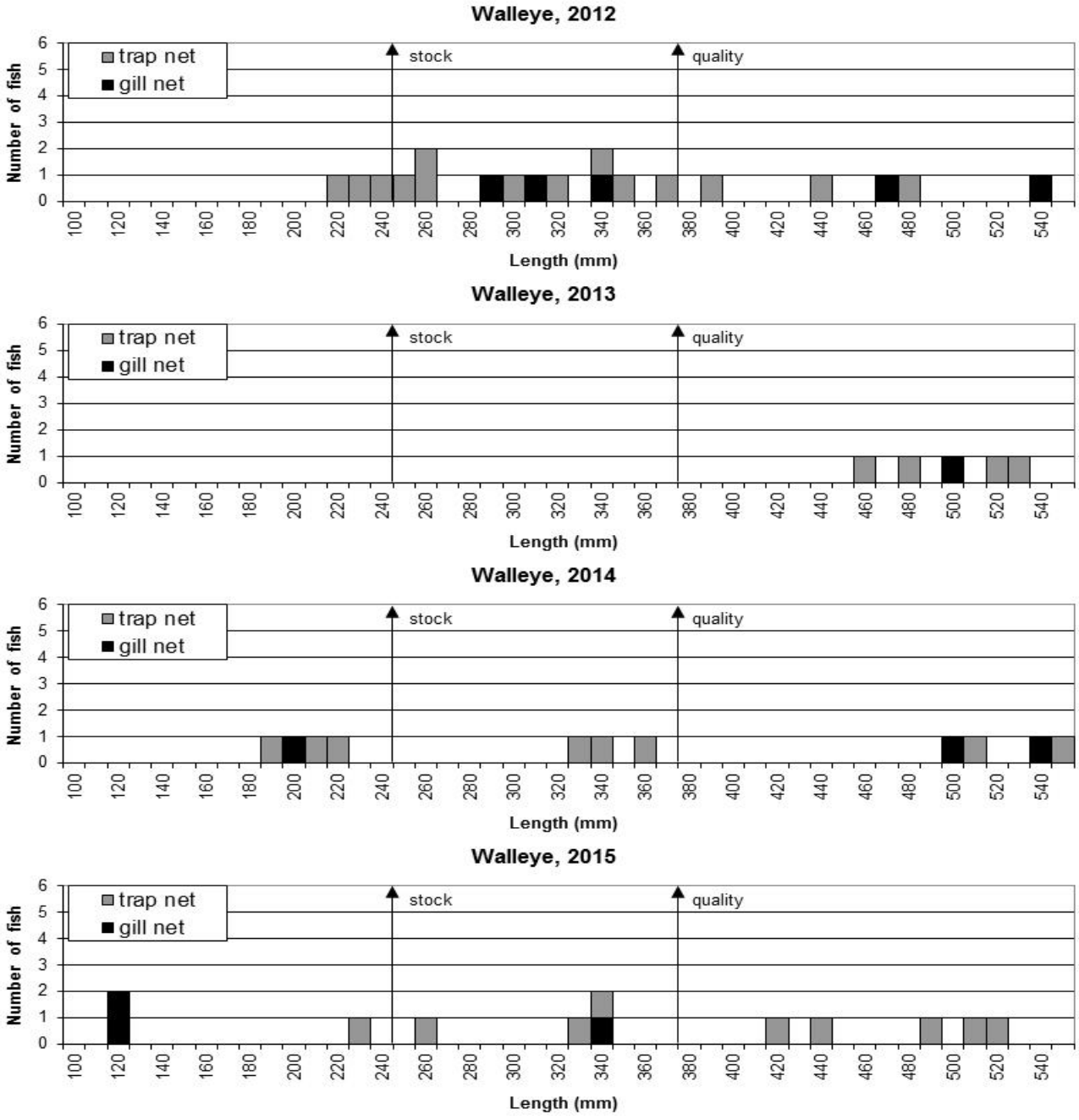

Figure 5. Length frequency histograms of walleye collected in trap nets and gill nets, Flat Creek Lake, Perkins County, 2012-2015.

Other fishes

Other fishes collected during the 2015 Flat Creek Lake survey were yellow perch (N=1), black crappie (N=4), white crappie (N=3), and white sucker (N=1). All black and white crappie were over quality length of 200 mm. Other fish species collected during recent surveys, but not observed during in 2015 included: bluegill, green sunfish, largemouth bass and channel catfish.

RECOMMENDATIONS

1. Stock large, fall walleye fingerlings at a rate of 10 per acre at least every other year until management objectives are reached.

2. Stock adult largemouth bass at a rate of 10 per acre to increase bass density.

3. Conduct a fall electrofishing survey, in conjunction with netting surveys, to better evaluate the largemouth bass and walleye populations, stocking success and influences stockings may have on other fish populations in the reservoir.

4. Consider stocking adult gizzard shad as a source for forage fish and evaluate effects of the stockings on the other fish populations in the reservoir.

APPENDIX

Appendix A. Stocking history, including year, number, species and size of fish for Flat Creek Lake, Perkins County, South Dakota, 2009-2015.

Year	Number	Species	Size
2009	46,625	Walleye	Fingerling
	1,000	Largemouth bass	Fingerling
2010	680	Yellow perch	Adult
	191,200	Northern pike	Fry
	20,000	Walleye	Fingerling
	1,000	Largemouth bass	Fingerling
2011	7,800	Largemouth bass	Fingerling
	30,000	Northern pike	Fry
	13,930	Walleye	Fingerling
2012	14,460	Largemouth bass	Fingerling
2013	4,000	Walleye	Large fingerling
2014	19,800	Walleye	Small fingerling

	100	Largemouth bass	Adult
2015	Not Stocked		