

Keisz Lake

Site Description

Location

Water designation number (WDN)	47-0013-00
Legal description	T128N-R69W-Sec. 6, 7; T128N-R70W-Sec. 12
County (ies)	McPherson
Location from nearest town	5 miles north of Long Lake, SD

Survey Dates and Sampling Information

Survey dates	July 25, 2012 (GN)
Gill net sets (n)	3

Morphometry (Figure 1)

Watershed area (acres)	38,022
Surface area (acres)	≈280
Maximum depth (ft)	unknown
Mean depth (ft)	unknown

Ownership and Public Access

Keisz Lake is a non-meandered lake and the fishery is managed by SDGFP. No boat ramp exists and public access is primarily limited to public road rights-of-way. Lands adjacent to the Keisz Lake are owned by the U. S. Fish and Wildlife Service and private individuals.

Watershed and Land Use

A 38,022 acre un-named (HUC-12) sub-watershed encompasses Keisz Lake and is located within the larger Long Lake (HUC-10) watershed. Land use within the watershed is primarily agricultural including a mix of pasture or grassland and cropland.

Water Level Observations

Water levels on Keisz Lake are not monitored by SDDENR.

Fish Management Information

Primary species	Walleye, Yellow Perch
Other species	Black Bullhead
Lake-specific regulations	none
Management classification	none
Fish consumption advisories	none

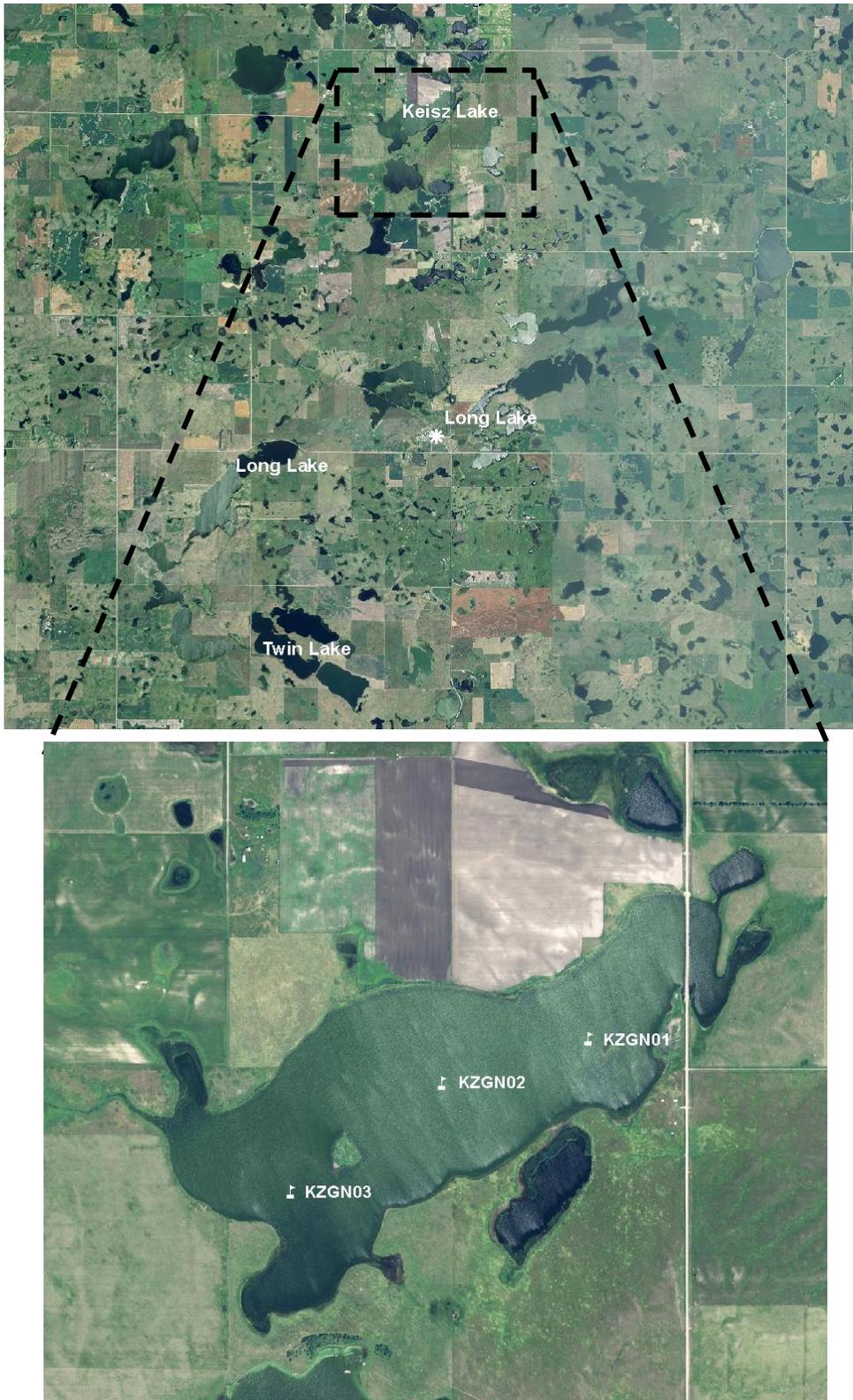


Figure 1. Map depicting geographic locations of several, McPherson County, lakes from Long Lake, South Dakota (top). Also noted are standardized net locations for Keisz Lake (bottom). KZGN= gill net

Management Objectives

- 1) Maintain a mean gill net CPUE of stock-length Walleye ≥ 10 , a PSD of 30-60 and a PSD-P of 5-10.
- 2) Establish and maintain a mean gill net CPUE of stock-length Yellow Perch ≥ 30 , a PSD of 30-60 and a PSD-P of 5-10.

Results and Discussion

Keisz Lake is a shallow-natural lake located near the city of Long Lake in McPherson County, South Dakota. Heavy precipitation in the mid to late 1990's and the resulting run-off increased water depths to levels capable of supporting a sport fishery. Although not managed as a sport fishery until 2008, Keisz Lake contained an abundant yellow perch population that has been used during trap and transfer operations. Walleye were first stocked the lake by SDGFP in 2008 (Table 4). Currently, Keisz Lake is managed as a Walleye and Yellow Perch fishery.

Primary Species

Walleye: The mean gill net CPUE of stock-length Walleye was 11.3 (Table 1) and above the minimum objective (≥ 10 stock-length Walleye/net night). Based on the 2012 gill net CPUE, relative abundance is considered high.

Walleye captured in the 2012 gill net catch ranged in TL from 32 to 66 cm (12.6 to 26.0 in), had a PSD of 29 and a PSD-P of 3 (Table 1; Figure 2). Both the PSD and PSD-P were slightly below the management objectives of 30-60 and 5-10, respectively. However, size structure indices should be interpreted with caution as sample size was low (i.e., 34 stock-length Walleye).

Otoliths were collected from a sub-sample of gill net captured walleye. Age structure information indicated that the majority (97%) of sampled Walleye were from year classes produced in 2009 and 2010, which coincided with fry stockings (Table 2; Table 4). The weighted mean TL at capture of age-2 (2010 year class) and age-3 (2009 year class) Walleye was 345 and 414 mm (13.6 and 16.3 in), respectively (Table 3). Gill net captured Walleye in the stock-quality and quality-preferred length categories had mean W_r values of 86 and 93.

Yellow Perch: The mean gill net CPUE of stock-length Yellow Perch was 37.3 (Table 1). The gill net CPUE was above the minimum objective (≥ 30 stock-length Yellow Perch/net night) and indicated moderate to high relative abundance. Yellow Perch captured in the gill net catch ranged in TL from 8 to 26 cm (3.1 to 10.2 in; Figure 3). The majority of Yellow Perch in the gill net catch were \leq quality-length (20 cm; 8 in) as indicated by the low PSD and PSD-P values of 7 and 1, respectively (Table 1; Figure 3). Both the PSD and PSD-P were below management objectives of 30-60 and 5-10 (Table 3).

Otoliths were collected from a sub-sample of gill net captured yellow perch and age structure information suggested the presence of four year classes (2007, 2009-2011; Table 5). The 2011 cohort was the most represented and comprised 94% of Yellow Perch in the gill net catch (Table 5).

The weighted mean TL at capture for age-1 male Yellow Perch was 133 (5.2 in); while age-1 female Yellow perch had a weighted TL of 147 mm (5.8 in; Table 6). Few older Yellow Perch were captured (Table 5). The majority of Yellow Perch in the gill net catch were in the stock-quality length category, which had a mean Wr of 109.

Other Species

Black Bullhead: Black bullhead was the most abundant fish species in the 2012 gill net catch (Table 1). The mean gill net CPUE of stock-length Black Bullhead was 46.0 (Table 1).

Gill net captured Black Bullhead Black ranged in TL from 12 to 30 cm (4.7 to 11.8 in), had a PSD of 57, and a PSD-P of 1 (Table 1, Figure 3). Stock-length Black Bullhead had high condition, with Mean Wr values that exceeded 100 for all length categories (e.g., stock to quality) sampled. The mean Wr of stock-length Black Bullhead was 110 (Table 1). No discernible length-related trends in condition were observed.

Management Recommendations

- 1) Conduct fish community assessment surveys on an every fifth year basis (next survey scheduled in summer 2017) to monitor fish relative abundance, fish population size structures, fish growth, and stocking success.
- 2) Collect otoliths from Walleye and Yellow Perch to assess age structure and growth rates of each population.
- 3) Stock Walleye (\approx 500 fry/acre) on a biennial basis (even years) to establish additional year classes provided water levels are sufficient.
- 4) Monitor winter and summer kill events. In cases of substantial winter/summer kill the need to re-establish a fishery in Keisz Lake should be evaluated. If water levels are sufficient, Walleye and Yellow Perch should be stocked to re-establish a fish community.

Table 1. Mean catch rate (CPUE; catch/net night) of stock-length fish, proportional size distribution of quality- (PSD) and preferred-length fish (PSD-P), and mean relative weight (Wr) of stock-length fish for various fish species captured in experimental gill nets from Keisz Lake, 2012. Confidence intervals include 80 percent (\pm CI-80) or 90 percent (\pm CI-90). BLB= black bullhead; WAE= walleye; YEP= yellow perch

Species	Abundance		Stock Density Indices				Condition	
	CPUE	CI-80	PSD	CI-90	PSD-P	CI-90	Wr	CI-90
<i>Gill Nets</i>								
BLB	46.0	25.6	57	7	1	1	110	1
WAE	11.3	2.7	29	13	3	5	88	2
YEP	37.3	5.5	7	4	1	1	109	<1

Table 2. Year class distribution based on the expanded age/length summary for walleye sampled in gill nets and associated stocking history (# stocked x 1,000) from Keisz Lake, 2012.

Survey Year	Year Class									
	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003
2012			24	9						1
# stocked										
fry	130		100	100	100					
sm. fingerling										
lg. fingerling										

Table 3. Weighted mean TL at capture (mm) for walleye sampled in experimental gill nets (expanded sample size) from Keisz Lake, 2012.

Year	1	2	3	4	5	6	7	8	9
2012	---	345(24)	414(9)	---	---	---	---	---	664(1)

Table 4. Stocking history including size and number for fishes stocked into Keisz Lake, 2003-2012. WAE= walleye

Year	Species	Size	Number
2008	WAE	fry	100,000
2009	WAE	fry	100,000
2010	WAE	fry	100,000
2012	WAE	fry	130,000

Table 5. Year class distribution based on the expanded age/length summary for yellow perch sampled in gill nets from Keisz Lake, 2012.

Survey Year	Year Class					
	2012	2011	2010	2009	2008	2007
2012		134	2	5		1

Table 8. Weighted mean TL (mm) at capture by gender for yellow perch captured in experimental gill nets (expanded sample size) from Keisz Lake, 2012.

Year	Age				
	1	2	3	4	5
2012					
Male	133 (35)	---	206 (1)	---	247 (1)
Female	147 (81)	227 (2)	240 (4)	---	---
Combined	142 (134)	227 (2)	233 (5)	---	247 (1)

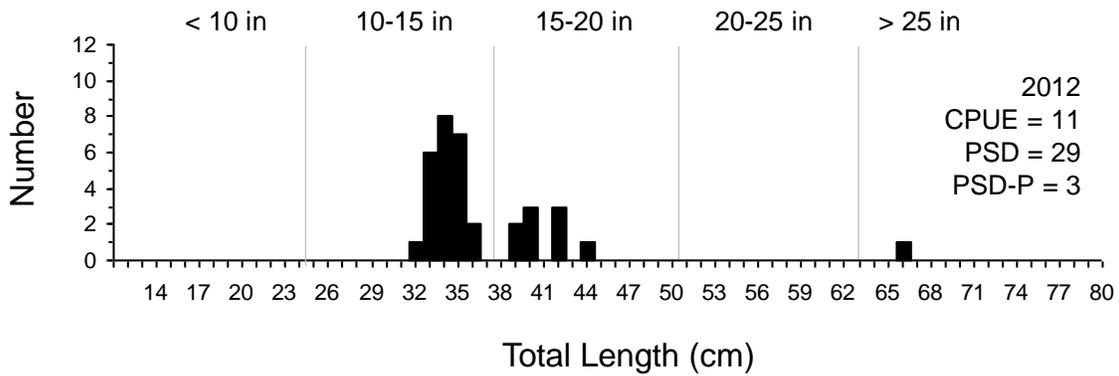


Figure 2. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish for Walleye captured using experimental gill nets in Keisz Lake, 2012.

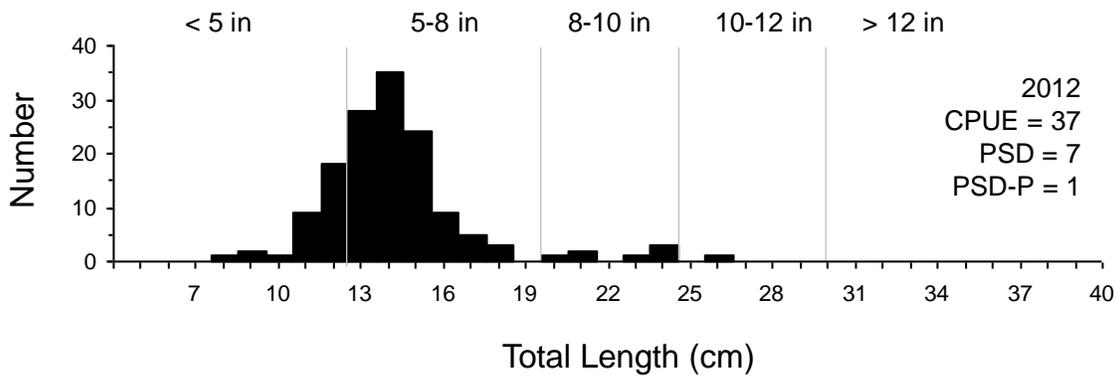


Figure 3. Length-frequency histogram, catch rate of stock-length fish (CPUE), proportional size distribution of quality- (PSD) and preferred-length (PSD-P) fish for Yellow Perch captured using experimental gill nets in Keisz Lake, 2012.