

SOUTH DAKOTA STATEWIDE FISHERIES SURVEY

2102-F-21-R-47

Name: Lake Pocasse **County(ies):** Campbell

Legal Description: T128N-R78W-Sec. 9, 10, 15, & 16

GPS: 45°54'18.05"N 100°17'09.95"W

Location from nearest town: North edge of the city of Pollock

Date of present survey: June 2-4, 2014 (netting)

Date of last survey: June 6-8, 2011 (netting)

Most recent lake management plan: F-21-R-43 (January 1, 2011 to December 31, 2015)

Management classification: Warmwater Permanent

Primary Game Species	Secondary and Other Species
Northern Pike	Black Bullhead
Black Crappie	Common Carp
Yellow Perch	Channel Catfish
Walleye	White Bass
	Freshwater Drum

PHYSICAL DATA

Surface Area: 1,800 acres

Watershed: 584,500 acres

Maximum Depth: 17 feet

Mean Depth: 6 feet

Lake elevation at time of survey (field observations): Full

Contour map: No

Date: NA

Ownership of lake and adjacent lakeshore properties:

Lake Pocasse is an 1800-acre impoundment located on the lower end of Spring Creek adjacent to the city of Pollock in northwestern Campbell County. The residents of the Pollock area named Pocasse after a Sioux Indian Chief during final construction of the dam. The U.S. Corps of Engineers completed the dam grade creating Lake Pocasse in 1961 as part of the Missouri River Reservoir system. Lake Pocasse and the adjacent land just became property of the State of South Dakota in the last couple years as part of the Title 6 land transfer. Currently, fisheries management at Pocasse is completed by the South Dakota Department of Game, Fish and Parks.

Watershed condition with percentages of land use types:

The watershed for Lake Pocasse is 585,500 acres, 90% of which is privately owned agricultural land consisting of cultivated cropland, hayland and pasture. The remaining 10% is made up of towns, farmsteads and roads. Native grasses border the immediate shoreline.

Fishing access:

There is a good boat ramp for water access on the south end of the lake. There is also ample shoreline fishing opportunities around different areas of the lake.

Condition of all structures (i.e. spillway, boat ramps, level regulators, etc.):

All structures are in excellent condition.

Field observations of aquatic vegetation condition:

There was no submergent vegetation found in Lake Pocasse at the time of the survey. The main emergent vegetation found around Lake Pocasse was bulrushes and cattails, which were found around most of the shoreline and especially in the north and east ends of the lake.

CHEMICAL DATA**Field observations of water quality and pollution problems:**

No pollution problems were evident at the time of the survey. Water clarity was fair with a secchi disc reading of 1.5 feet. Other water quality characteristics were measured in the field on June 3, 2014, using a HACH water quality kit and a Hanna multiparameter meter. Results are found in Table 1.

Presence of a thermocline and depth from surface: No

Station for water chemistry located on attached map: Yes

Table 1. Water chemistry results from Lake Pocasse, Campbell County, June 3, 2014.

Station	Depth (ft)	Temp (F)	DO (ppm)	CO2 (ppm)	ALK (mg/L)	HRD (mg/L)	pH	Cond. (μS/cm)	TDS (ppm)	Sal.	ORP	Secchi (ft)
A	Surface	67.4	4.30	47.8	269	368	9.41	836	417	0.41	-236.0	1.5
A	12.8	67.1	3.89	63.6	276	345	8.72	835	416	0.41	-227.5	

BIOLOGICAL DATA**Methods:**

Lake Pocasse was sampled on June 2-4, 2014, with twelve overnight trap net sets. The trap nets have 3ft x 5ft frames, 60ft leads, and ¾ inch knotted mesh. Four experimental gill nets were also set. The gill nets are 150ft x 6ft with 25ft panels of ½, ¾, 1, 1-1/4, 1-1/2, and 2-inch monofilament mesh. No electrofishing was done during this sampling period. Fish indices and statistics were completed using Winfin.

Results and Discussion:

Gill net catch

Table 2. Total catch of four, 150ft experimental gill nets at Lake Pocasse, Campbell County, June 2-4, 2014.

Species	#	%	CPUE	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Common Carp	53	60.2	13.3	± 3.8	7.3	98	37	67
Northern Pike	16	18.2	4.0	± 2.4	4.3	100	75	92
Walleye	12	13.7	3.0	± 2.4	3.2	100	18	94
Freshwater Drum	3	3.4	0.8	± 0.4	0.5	--	--	--
Black Bullhead	2	2.3	0.5	± 0.5	14.0	--	--	--
Yellow Perch	1	1.1	0.3	± 0.4	1.6	--	--	--
Orangespotted Sunfish	1	1.1	0.3	± 0.4	0.1	--	--	--

* Nine year mean (1994, 1997, 1999, 2001, 2003, 2005, 2008, 2010, 2011)

Trap Net Catch

Table 3. Total catch of twelve, overnight ¾-inch frame nets at Lake Pocasse, Campbell County, June 2-4, 2014.

Species	#	%	CPUE	80% C.I.	Mean CPUE*	PSD	RSD-P	Mean Wr
Black Bullhead	119	55.9	9.9	± 3.9	89.0	96	10	95
Channel Catfish	37	17.4	3.1	± 1.6	2.4	100	11	89
Common Carp	30	14.1	2.5	± 1.1	9.7	100	97	96
White Bass	10	4.7	0.8	± 0.7	0.5	100	100	100
Shortnose Gar	8	3.8	0.7	± 0.4	0.8	--	--	--
Smallmouth Bass	4	1.8	0.3	± 0.2	0.03	--	--	--
Northern Pike	3	1.4	0.3	± 0.1	4.7	--	--	--
Walleye	2	0.9	0.2	± 0.1	1.1	--	--	--

* Nine year mean (1994, 1997, 1999, 2001, 2003, 2005, 2008, 2010, 2011)

Fish Populations

Lake Pocasse contains a unique fish community that resembles a lot like Lake Oahe. The two were not connected for several years and Pocasse started to get its own unique fish community until water levels in Lake Oahe got high enough that the two flowed together. Now Lake Pocasse is pretty much the same fish community as Lake Oahe again.

Black bullheads were the dominant species sampled in the trap nets. The trap net CPUE of 9.9 is well below the 92.3 from the 2011 survey (Table 6) as well as the 89.0 nine-year mean (Table 3). The gill net CPUE of 0.5 is also below the 28.0 from the 2011 survey (Table 6) as well as the 14.0 nine year mean (Table 2). Figures 1 through 4 illustrate the length frequency histograms for the fish sampled over the past four surveys. Size structure has continued to increase. Condition is good with a mean Wr of 95.

Figure 1. Length frequency histogram for black bullhead sampled from Lake Pocasse, Campbell County, 2014.

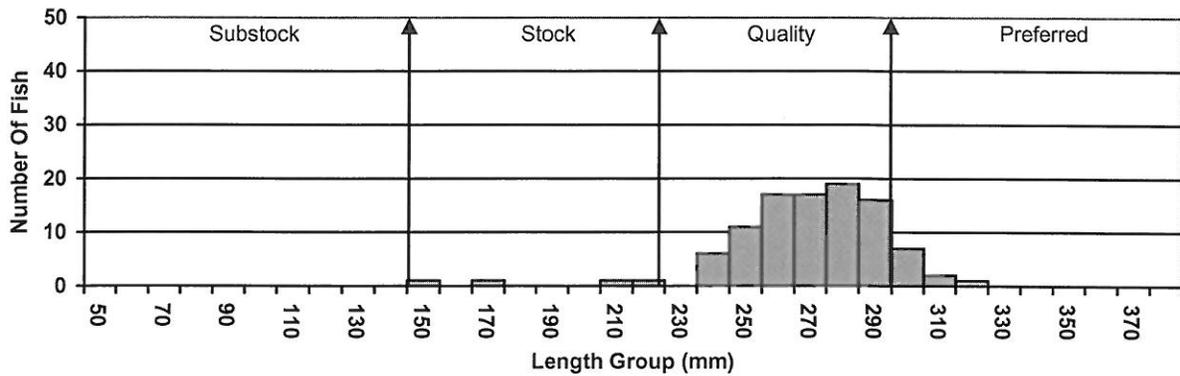


Figure 2. Length frequency histogram for black bullhead sampled from Lake Pocasse, Campbell County, 2011.

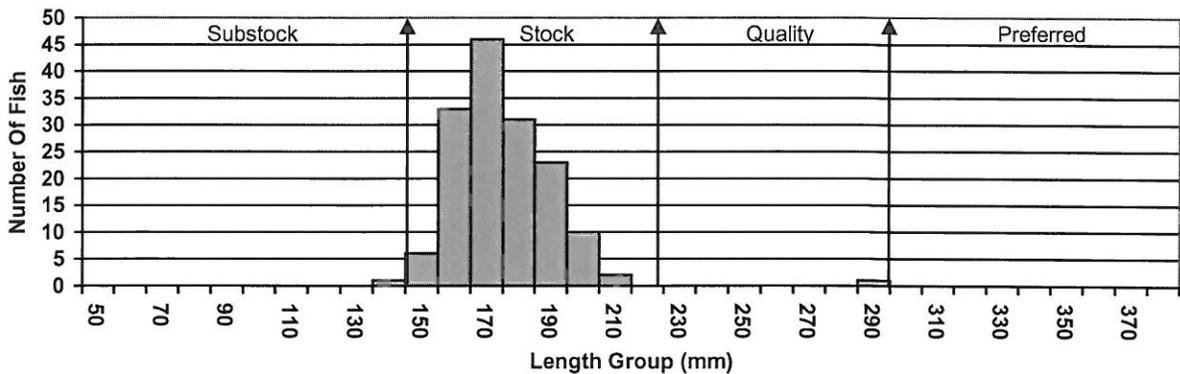


Figure 3. Length frequency histogram for black bullhead sampled from Lake Pocasse, Campbell County, 2010.

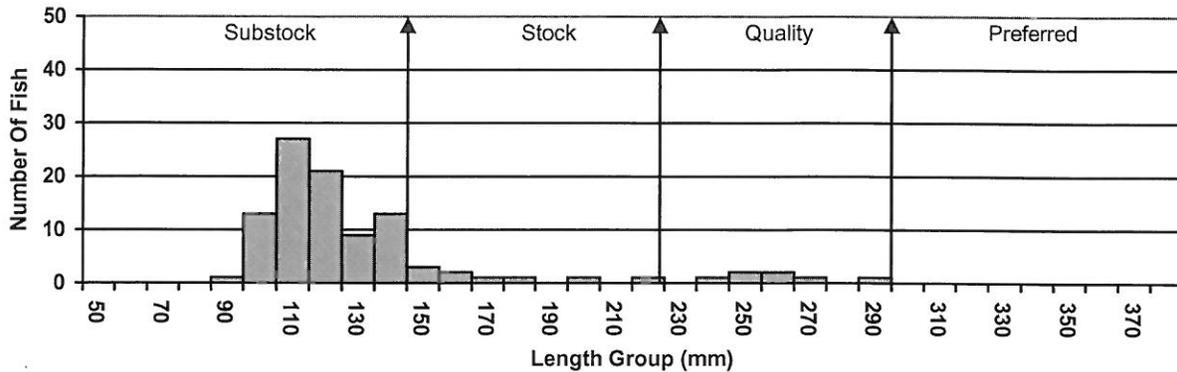
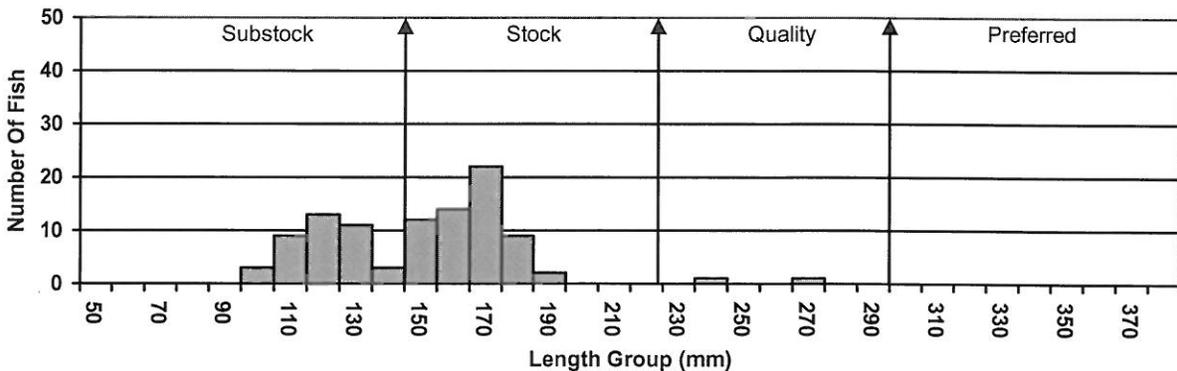


Figure 4. Length frequency histogram for black bullhead sampled from Lake Pocasse, Campbell County, 2008.



Common carp were another high density species sampled. The gill net CPUE of 13.3 is well above the 3.0 from the 2011 survey (Table 6) as well as the 7.3 nine year mean (Table 2). The trap net CPUE of 2.5 is above the 1.8 from the 2011 survey (Table 6) but below the 9.7 nine year mean (Table 3). Figures 5 through 8 illustrate the length frequency histograms for the fish sampled from the last four surveys. Size structure is almost identical to the 2011 survey. Condition is fine with a mean W_r of 82.

Figure 5. Length frequency histogram for common carp sampled from Lake Pocasse, Campbell County, 2014.

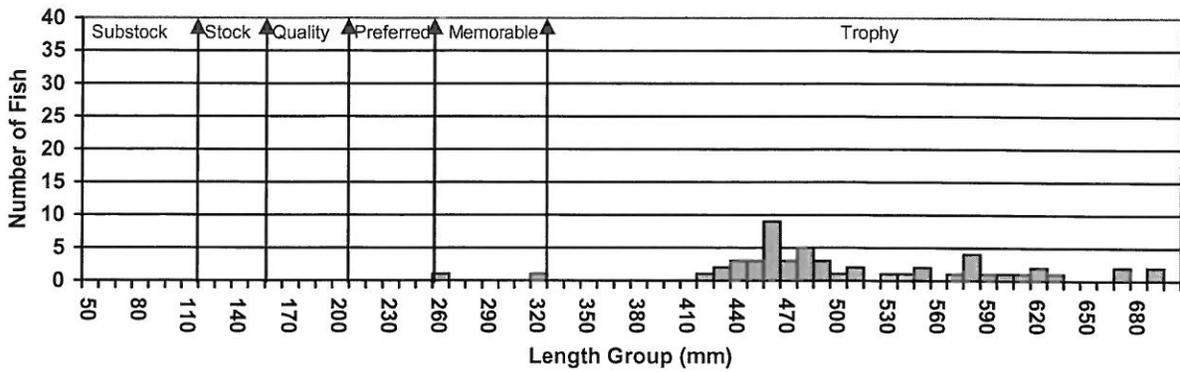


Figure 6. Length frequency histogram for common carp sampled from Lake Pocasse, Campbell County, 2011.

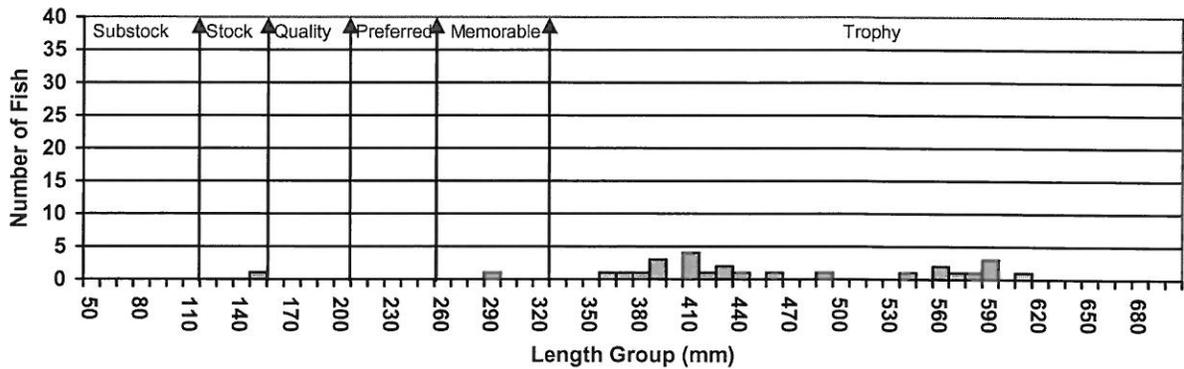


Figure 7. Length frequency histogram for common carp sampled from Lake Pocasse, Campbell County, 2010.

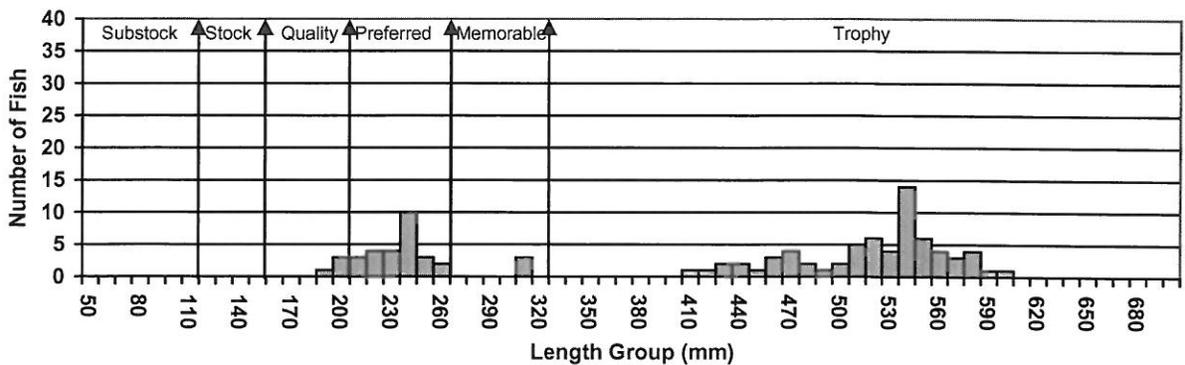
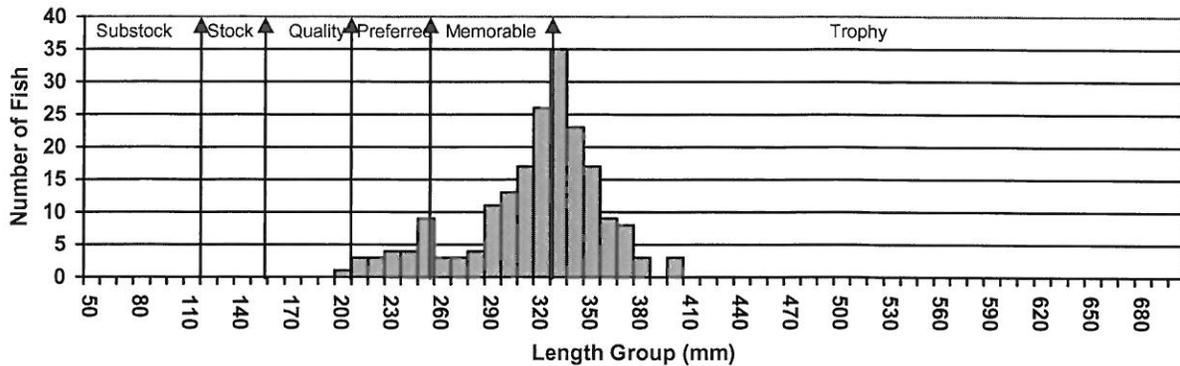


Figure 8. Length frequency histogram for common carp sampled from Lake Pocasse, Campbell County, 2008.



Lake Pocasse still contains a channel catfish population although numbers were down this survey. No fish were sampled in the gill nets this survey. The trap net CPUE of 3.1 is below the 11.8 from the 2011 survey (Table 6) but slightly above the 2.4 nine year mean (Table 3). Figures 9 through 11 illustrate the length frequency histograms for the fish sampled the last three surveys. Not much has changes other that the density over the last three surveys. Condition is good with a mean W_r of 89.

Figure 9. Length frequency histogram for channel catfish sampled from Lake Pocasse, Campbell County, 2014.

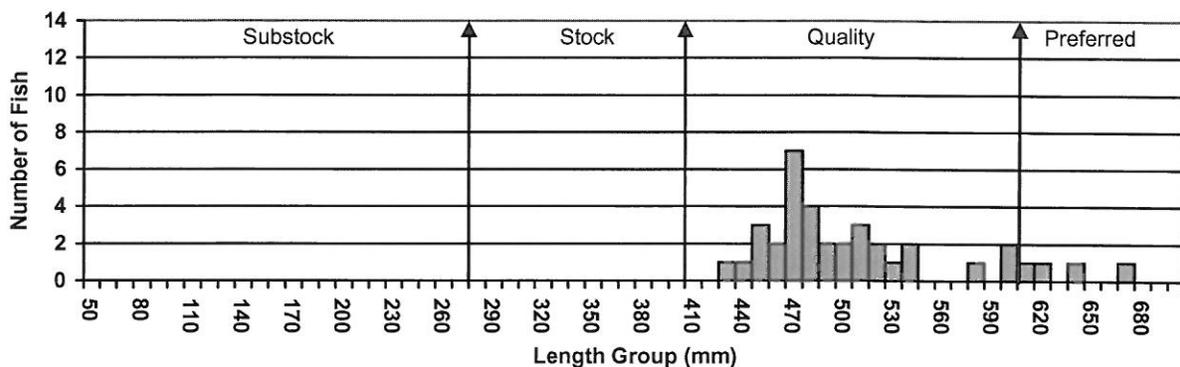


Figure 10. Length frequency histogram for channel catfish sampled from Lake Pocasse, Campbell County, 2011.

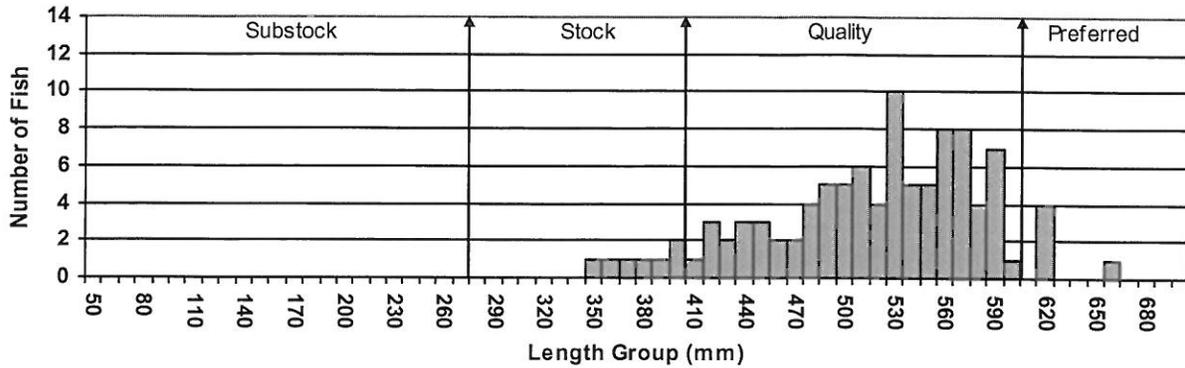
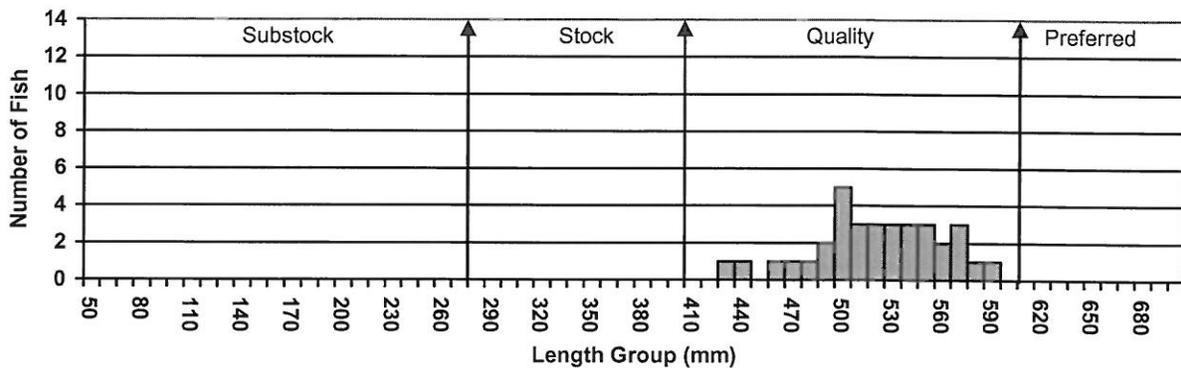


Figure 11. Length frequency histogram for channel catfish sampled from Lake Pocasse, Campbell County, 2010.



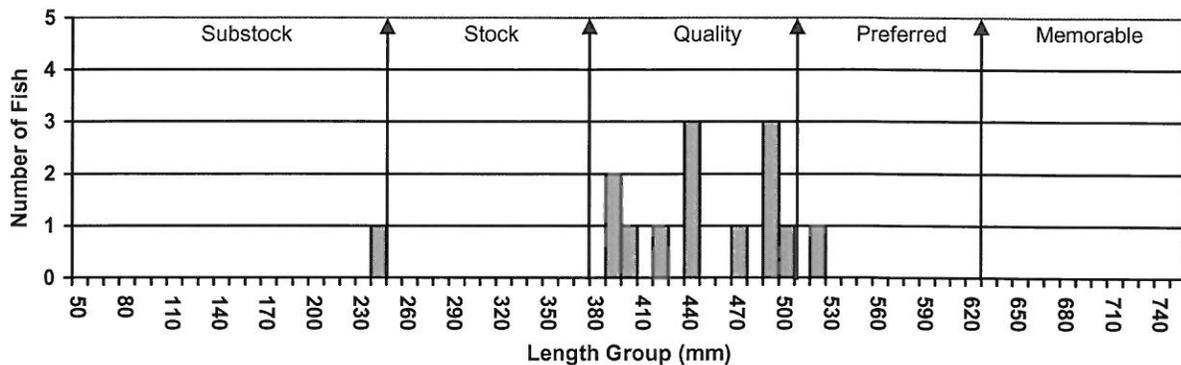
Lake Pocasse contains a low density walleye population. The gill net CPUE of 3.0 is above the 1.5 from the 2011 survey (Table 6) and right on with the 3.2 nine year mean (Table 2). The trap net CPUE of 0.2 is right on with the 0.3 from the 2011 survey (Table 6) but below the 1.1 nine year mean (Table 3). Figure 12 illustrates the length frequency histogram for the fish sampled this survey. Growth is good with means right around statewide, regional and SLI means (Table 4). Condition is good with a mean W_r of 94.

Table 4. Average back-calculated lengths (mm) for each age class of walleye sampled from Lake Pocasse, Campbell County, 2014.

Year Class	Age	N	Back-calculated Age							
			1	2	3	4	5	6	7	
2013	1	1	227							
2011	3	6	205	333	426					
2010	4	2	197	335	408	482				
2009	5	3	180	313	389	444	506			
2007	7	1	149	298	394	412	442	464	493	
All Classes			192	320	404	446	474	464	493	
Statewide Mean			168	279	360	425	490			
Region II Mean			169	282	346	408	455			
SLI* Mean			176	271	384	431	483			

* Small Lakes and Impoundments

Figure 12. Length frequency histogram for walleye sampled from Lake Pocasse, Campbell County, 2014.



Northern pike, freshwater drum, yellow perch, orangespotted sunfish, white bass, shortnose gar, and smallmouth bass were the other species sampled this survey. None of which were sampled in large enough numbers to make any inferences about their populations. Black crappie, white sucker, bluegill, bigmouth buffalo, shorthead redhorse, pumpkinseed sunfish, and river carpsucker were the species not sampled that have been in years past (Table 6).

Table 5. Stocking records for the last ten years for Lake Pocasse, Campbell County.

Year	Number	Species	Size
2005	638	Yellow Perch	Juvenile
2005	217	Black Crappie	Adult
2005	37	Yellow Perch	Adult
2007	180,940	Walleye	Small Fingerling
2007	40	Black Crappie	Adult
2007	120	Yellow Perch	Adult
2008	2,000,000	Walleye	Fry

RECOMMENDATIONS

1. Resurvey in 2017 to monitor the fish populations.
2. Continue to stock yellow perch till a CPUE of 10 is reached.
3. Continue to stock black crappie till a CPUE of 10 is reached.
4. Continue to stock walleye on an every other year basis, either fry or fingerlings.

Table 6. Gill net (GN) and trap net (TN) CPUE for all fish species sampled in Lake Pocasse since 1993 when the lake was drained to fix the control structure.

Species	1994	1997	1999	2001	2003	2005	2008	2010	2011	2014
BLB (GN)	1.3	64.5	11.5	0.5	1.8	0.5	5.5	12.0	28.0	0.5
BLB (TN)	1.9	284.8	48.8	13.4	16.8	5.4	47.3	289.9	92.3	9.9
BLC (GN)	--	0.3	--	--	--	--	--	--	--	--
BLC (TN)	--	--	0.1	0.2	0.6	0.3	--	--	--	--
YEP (GN)	--	1.0	3.3	--	0.3	--	--	6.0	4.0	0.3
YEP (TN)	--	--	0.1	--	0.1	--	--	0.1	--	--
NOP (GN)	15.3	4.5	4.0	3.3	4.5	0.8	0.3	5.5	0.5	4.0
NOP (TN)	30.8	4.6	0.8	1.7	0.8	1.7	--	1.4	0.2	0.3
CCF (GN)	--	11.3	3.5	6.8	1.5	6.0	--	6.0	2.0	--
CCF (TN)	--	--	0.1	2.9	1.2	2.7	--	2.8	11.8	3.1
WHS (GN)	--	8.8	0.3	0.3	0.3	0.3	--	--	--	--
WHS (TN)	--	0.4	0.1	0.5	--	4.8	--	--	--	--
WHB (GN)	--	0.3	--	--	0.3	--	--	--	0.5	--
WHB (TN)	--	0.6	0.3	0.1	2.2	1.5	--	--	0.2	0.8
WAE (GN)	--	4.3	1.0	0.5	3.0	3.0	9.8	6.0	1.5	3.0
WAE (TN)	0.3	0.2	0.8	0.1	0.3	0.7	5.5	1.4	0.3	0.2
COC (GN)	0.5	0.3	--	--	--	--	50.0	11.5	3.0	13.3
COC (TN)	8.3	10.2	0.8	1.7	0.4	2.8	51.9	9.7	1.8	2.5
BLG (GN)	--	--	--	--	--	--	--	--	--	--
BLG (TN)	--	--	--	--	--	--	--	--	--	--
SMB (GN)	--	--	--	--	--	--	--	--	0.5	--
SMB (TN)	0.1	0.2	--	--	--	--	--	--	--	0.3
BMB (GN)	--	--	--	--	--	0.3	--	--	--	--
BMB (TN)	0.3	0.4	--	--	--	0.3	--	0.1	0.1	--
SHR (GN)	--	0.3	--	--	0.3	--	--	0.5	--	--
SHR (TN)	--	--	--	--	0.03	2.0	--	--	--	--
FRD (GN)	--	0.8	--	0.5	0.3	0.5	--	1.0	1.5	0.8
FRD (TN)	--	1.0	--	0.4	--	--	--	0.1	1.5	--
PUS (GN)	0.3	--	--	--	--	--	--	--	--	--
PUS (TN)	--	--	--	--	--	--	--	--	--	--
SNG (GN)	--	--	--	--	--	--	--	--	--	--
SNG (TN)	--	1.2	--	--	--	0.5	--	2.3	3.6	0.7
RIC (GN)	--	--	--	--	--	--	--	--	--	--
RIC (TN)	--	--	--	--	--	--	--	--	--	--
OSF (GN)	--	--	--	--	--	--	--	--	--	0.3
OSF (TN)	--	--	--	--	--	--	1.0	--	--	--

BLB-Black Bullhead, BLC-Black Crappie, YEP-Yellow Perch, NOP-Northern Pike, CCF-Channel Catfish, WHS-White Sucker, WHB-White Bass, WAE-Walleye, COC-Common Carp, BLG-Bluegill, SMB-Smallmouth Bass, BMB-Bigmouth Buffalo, SHR-Shorthead Redhorse, FRD-Freshwater Drum, PUS-Pumpkinseed Sunfish, SNG-Shortnose Gar, RIC-River Carpsucker, OSF-Orangespotted Sunfish