



## Lake Nelson 2016 Management Report

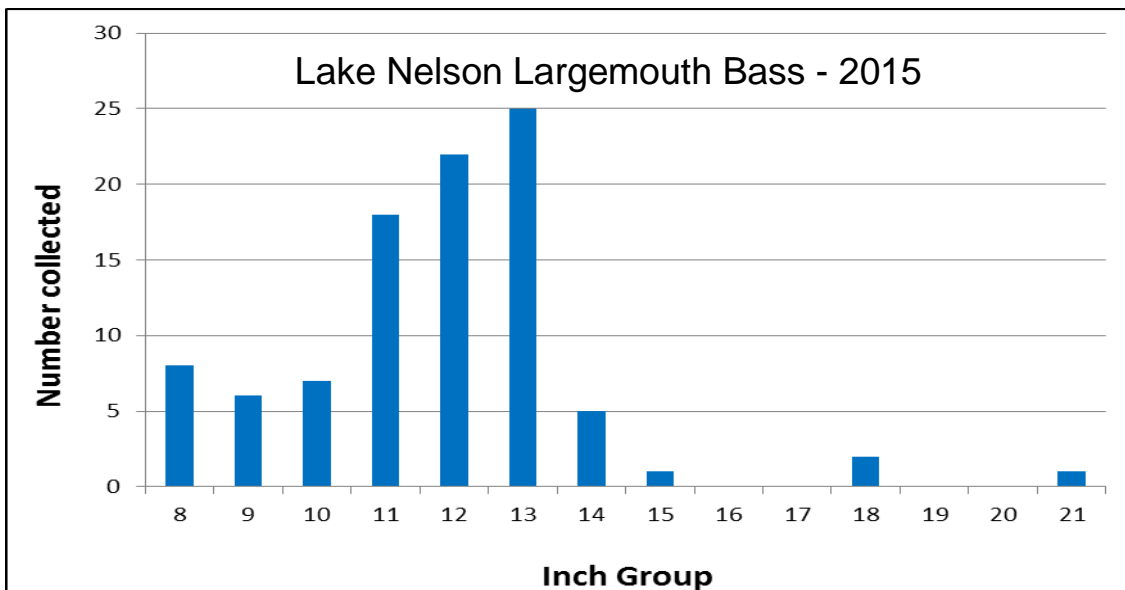


Lake Nelson is a 40-acre impoundment located in Nelson County, Virginia. This reservoir is owned by the Virginia Department of Game and Inland Fisheries (VDGIF) and is managed primarily for fisheries related activities. Facilities available at this reservoir are a boat ramp, parking areas near the boat ramp and dam, and portable toilets are available April-October. Bank anglers can utilize a large mowed area adjoining the parking lot, a mowed dam, and a narrow strip of VDGIF property that extends around the entire shoreline. The boundaries are marked with T posts and VDGIF property extends from the T posts to the lake. The lake is open 24 hours a day. Outboard motors are prohibited but electric motors are permitted.

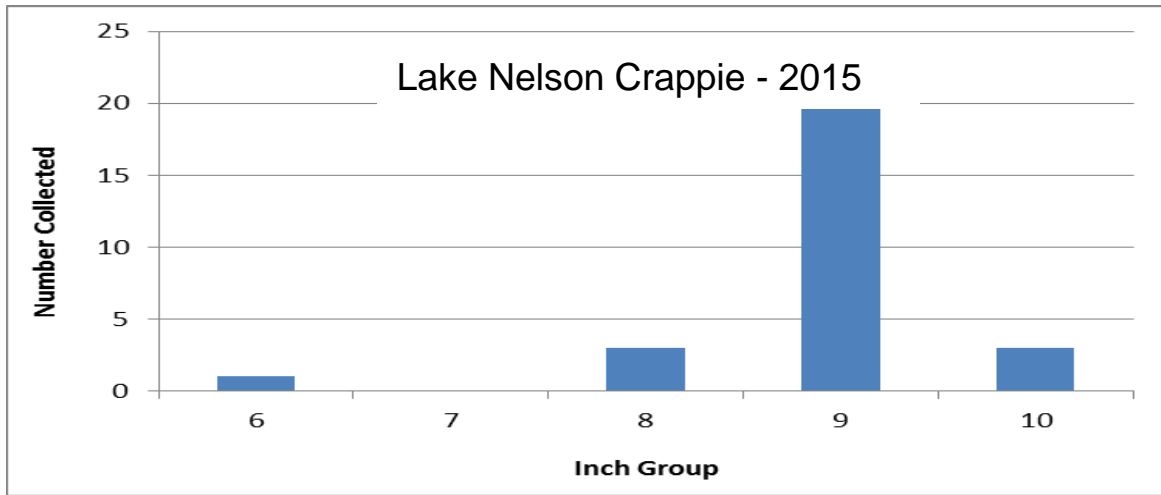
The reservoir was impounded in 1958 and was stocked with various species of fish such as largemouth bass, bluegill, redear sunfish, channel catfish, and crappie. The most popular sportfish species are largemouth bass, black crappie, and sunfish. Grass carp were also introduced to control aquatic vegetation. Any grass carp caught should be immediately released unharmed.

A lake fertilization project was initiated at Lake Nelson in the spring of 2008. This project is designed to improve the production of algae and plankton which is utilized by small fish and later by larger predators. The fertilization project should improve the number and quality of fish in the reservoir.

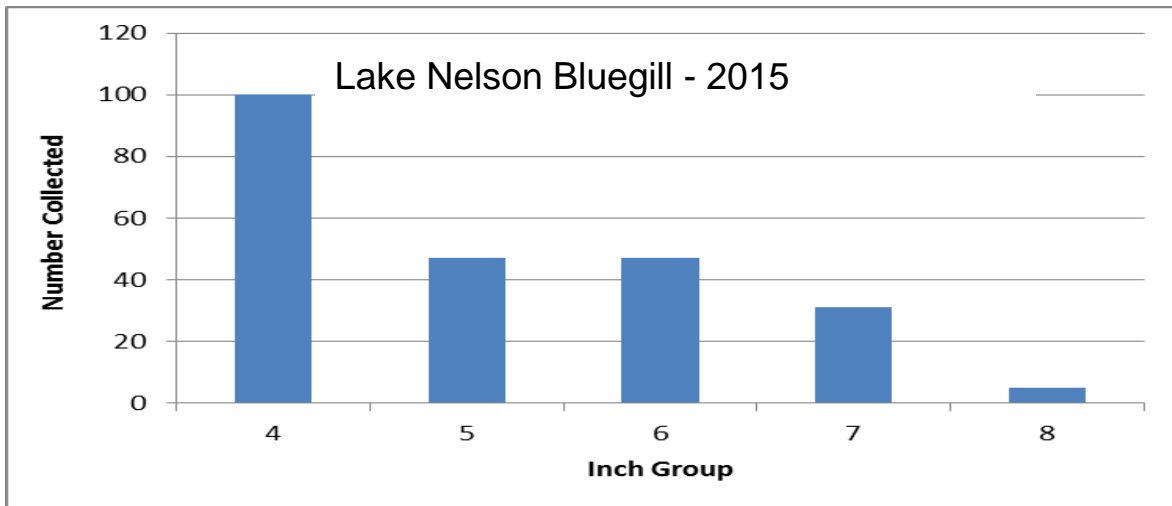
Largemouth bass are abundant but most of these fish are less than 14 inches. Largemouth bass were regulated with a 14-20 inch protected slot limit but this regulation was changed to a 15 inch minimum size limit in the spring of 2009. All bass caught less than 15 inches should be immediately released unharmed. The new size limit was initiated to expand the number of bass in the lake since most bass were harvested prior to reaching 14 inches.



The crappie population continues to fluctuate due to varying reproduction. Crappie routinely have good and bad years when it comes to spawning success especially in small lakes and Lake Nelson is not an exception. With this in mind, anglers may not know what to expect from year to year until they try their favorite crappie holes each spring. Current crappie numbers are fair but this population has experienced high harvest rates and most crappie were removed when they reached eight inches in length. To improve the size structure and reduce the impacts of variable reproduction, a nine inch minimum size limit was initiated in 2009. Anglers looking for crappie should check beaver lodges or shoreline structure such as fallen trees and brush piles in the spring and deeper water during other months.



Bluegill are the primary sunfish species available at Lake Nelson but there are a limited number of quality redear sunfish also available that contribute to the fishery. Sunfish less than seven inches in length dominate the sunfish population. Improvements in sunfish growth and average size are anticipated with lake fertilization and increased predation on the sunfish with more restrictive bass regulations.



Annual channel catfish stockings at Lake Nelson historically produced very few catfish for anglers. However, this lake now receives stockings of larger channel catfish (10"-12"), which does support a limited catfish fishery. Restrictive regulations are necessary to allow for the stocked fish to grow larger and provide a higher quality fish for anglers. The regulations for catfish include a 5 fish daily creel and a 15 inch minimum size limit.

Lake Nelson has an abundant fish population but does not produce high numbers of larger bass. Regulations are designed to sustain high numbers of smaller bass, create a more stable crappie population, provide good sunfish opportunities, and maintain a limited catfish. Overall, this fishery does provide quality fishing opportunities for many anglers.

The lake can be reached from Route 29 near Colleen, then take Route 655 about 2.8 miles to Arrington; go through Arrington, then left on Route 812, go about 2.2 miles and watch for the sign. Turn left and follow the road to the lake. For additional information, call 434-525-7522.

## Methods

- Three runs totaling 0.97 hours (entire shoreline) of daytime, boat electrofishing were completed on 4/17/15 for community assessment and largemouth bass population dynamics information. Water temperature was 19° C.
- Three runs totaling 1.01 hours (entire shoreline) of daytime, boat electrofishing were completed on 4/16/14 for community assessment and largemouth bass population dynamics information. One hundred forty eight bass (115 -415 mm, average 270 mm) were removed from the lake to reduce potential overcrowding. Water temperature was 16° C.
- Three runs totaling 0.83 hours (entire shoreline) of daytime, boat electrofishing were completed on 4/12/13 for community assessment and largemouth bass population dynamics information. Water temperature was 21° C.
- Three runs were conducted on two dates totaling 1.93 hours of daytime, boat electrofishing were completed on 3/29/12 and 4/30/12 for community assessment and largemouth bass population dynamics information. Two hundred fifty eight bass (108 - 305 mm, average 209 mm) were removed from the lake to reduce potential overcrowding. Water temperature was 18° C.

## **Lake Nelson Key Findings - 2016**

- The largemouth bass population had not responded favorably to a 14-20 inch protected slot limit. Too many bass were harvested prior to reaching the slot limit. Consequently, bass regulations were changed in the spring of 2009 to a 15 inch minimum length limit to protect additional smaller bass. In addition, a fertilization project was initiated in the spring of 2008 to increase aquatic production in the lake.
- In 2011, the lake was drawn down most of the year for emergency spillway repairs. As a result of the prolonged drawdown and missed year of fertilization (2011), bluegill abundance declined but largemouth bass catch rates of “Quality” size bass remained stable.
- After the lake was refilled in the fall of 2011, largemouth bass were removed during spring sampling in 2012 and 2014 to prevent bass overcrowding while sunfish numbers were rebuilding. Bass recruitment was not been stable from 2011-2015.
- Black crappie abundance continues to be low due to poor recruitment and heavy harvest. Electrofishing catch rates have been consistent since 2009 but stock indices continue to vary due to cyclic recruitment.
- A new 9 inch minimum size limit for crappie was initiated in 2009 to increase size of harvested crappie and extend good year classes for an additional 1-2 years. No detectable improvements have been identified to date, primarily due to low recruitment and abundance.
- Bluegill electrofishing CPUE remained high (average 451 fish/hr from 2003-2009) but declined in 2012 (242 fish/hr) after the lake drawdown. Catch rates for “Young” sizes also declined from 142 fish/hr (2003-2009) to 17 fish/hr (2012). “Stock” size abundance

improved to historical levels by 2013. Catch rates for “Young” sizes improved to historical levels in 2015.

- Redear sunfish were collected in low numbers during each sampling year but do not contribute substantially to the fishery due to low abundance.
- Stocked channel catfish have been collected in low numbers each spring during routine sampling since the larger catfish stocking program was initiated. This stocking does sustain a limited catfish fishery.
- A fertilization project for Lake Nelson was initiated in 2008 to increase fish growth and biomass. The lake responded favorably with algae blooms created after fertilizing. However, evaluation of the success of this program is not yet conclusive due to the 2011 drawdown.

### **2016 Management Recommendations**

- Monitor the 15 inch minimum size limit for largemouth bass to determine if the size limit improves the largemouth bass fishery. The regulation may need to be modified to reduce stockpiling of smaller bass.
- Continue the catfish stocking of larger fish.
- Monitor the 9 inch minimum size limit for crappie to determine if the size limit is improving the crappie fishery.
- Continue fertilizing Lake Nelson to improve fish biomass and growth.

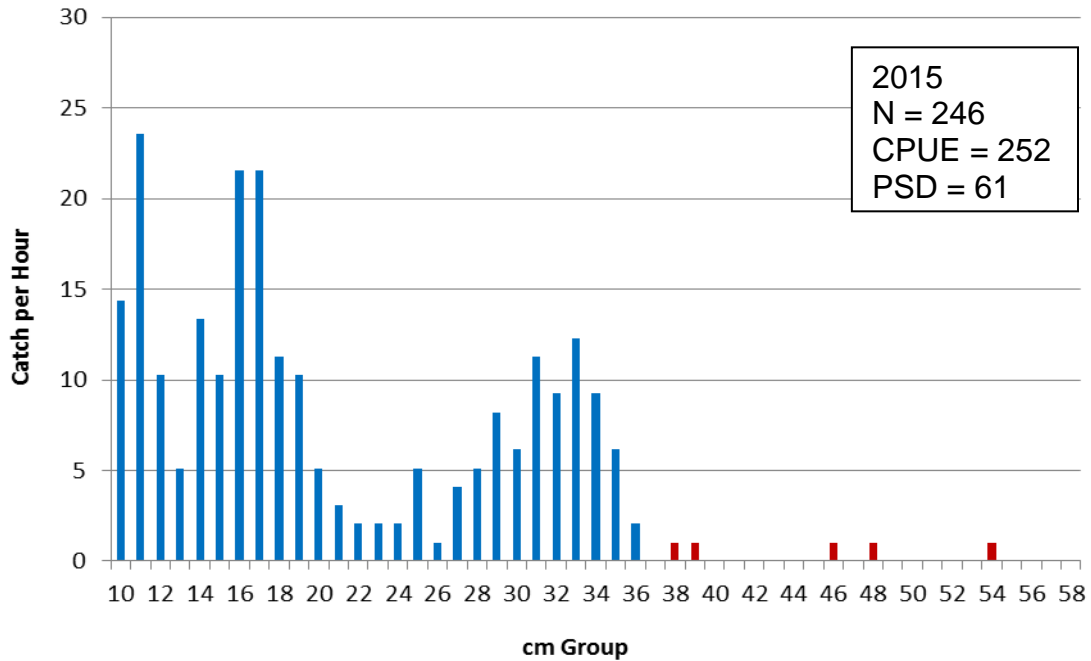


Figure 1. Length frequency distribution for largemouth bass collected with electrofishing gear at Lake Nelson on 4/17/2015. Red bars highlight sizes available for harvest.

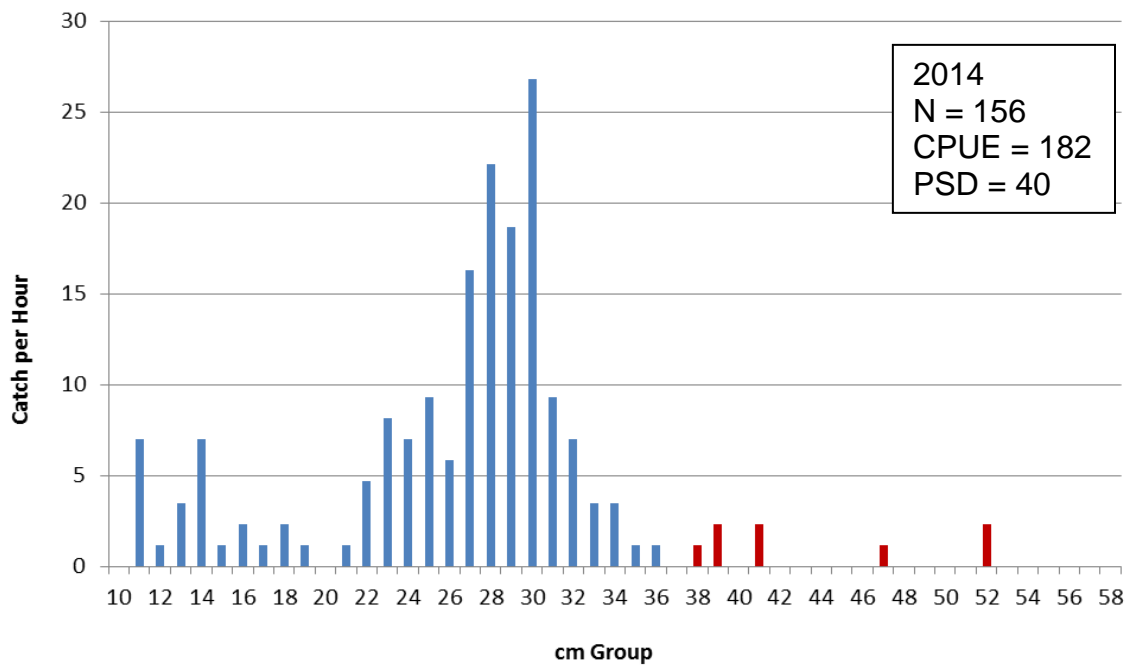


Figure 2. Length frequency distribution for largemouth bass collected with electrofishing gear at Lake Nelson on 4/16/2014. Red bars highlight sizes available for harvest.

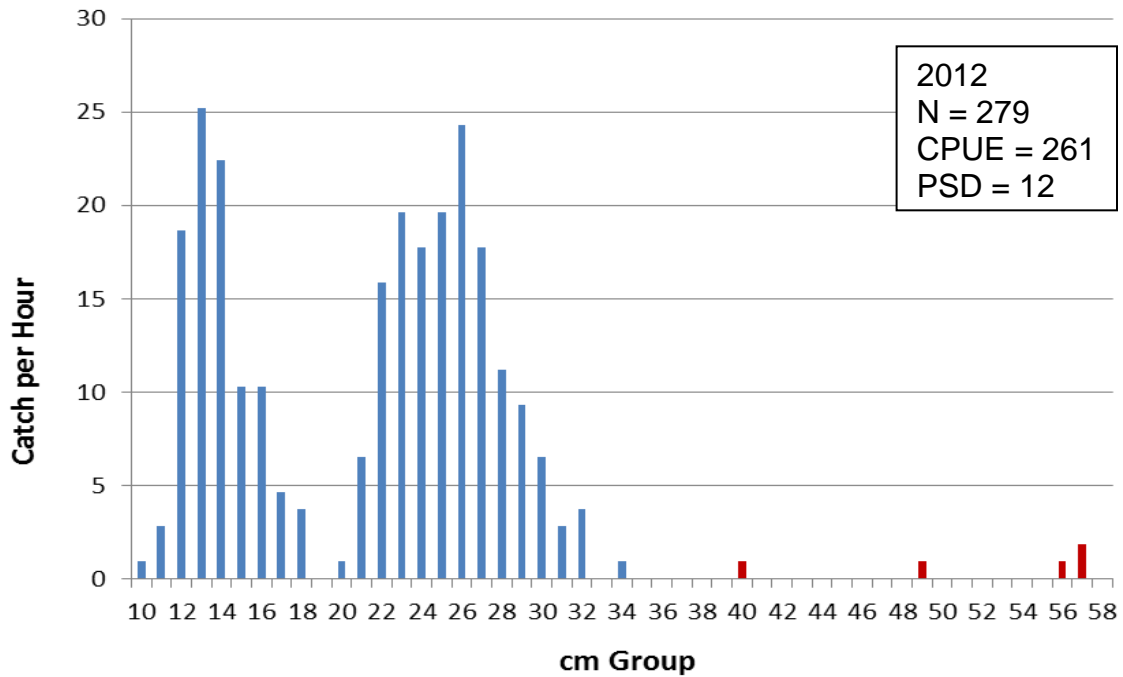


Figure 3. Length frequency distribution for largemouth bass collected with electrofishing gear at Lake Nelson on 4/30/2012. Red bars highlight sizes available for harvest.

Table 1. Largemouth bass electrofishing CPUE (#/hr) data collected from Lake Nelson, 2009-2015.

Year	N	CPUE	CPUE Young	CPUE Stock	CPUE Quality	CPUE Preferred	Sample Time
2015	246	252	153	38	56	5	0.9747
2014	156	182	27	93	52	9	0.8583
2013	198	240	39	120	68	13	0.8261
2012	279	261	99	143	14	5	1.0705
2010	321	338	177	100	51	11	0.9500
2009	369	300	136	102	57	5	1.2294

Table 2. Largemouth bass proportional and relative stock indices collected from Lake Nelson, 2009-2015 spring electrofish sampling.

Year	PSD	RSDp
2015	61	5
2014	40	6
2013	40	7
2012	12	3
2010	38	6
2009	38	3

Table 3. Black crappie electrofishing CPUE (#/hr) data collected from Lake Nelson, 2009-2015.

Year	N	CPUE	CPUE Young	CPUE Stock	CPUE Quality	CPUE Preferred	Sample Time
2015	64	68	19	19	24	3	0.9747
2014	58	68	0	5	59	3	0.8583
2013	41	50	4	41	0	5	0.8261
2012	38	20	0	0	8	36	0.8622
2009	73	59	1	24	30	4	1.2294

Table 4. Black crappie proportional and relative stock indices collected from Lake Nelson, 2009-2015 spring electrofish sampling.

Year	PSD	RSDp
2015	58	7
2014	93	5
2013	11	11
2012	100	82
2009	58	7



Table 5. Bluegill electrofishing CPUE (#/hr) data collected from Lake Nelson, 2009-2015.

Year	N	CPUE	CPUE Young	CPUE Stock	CPUE Quality	CPUE Preferred	Sample Time
2015	341	1395	205	843	327	20	0.2444
2014	123	600	39	273	273	15	0.2050
2013	180	720	16	516	164	24	0.2500
2012	56	242	17	169	56	0	0.2311
2009	292	539	148	353	37	2	0.5417

Table 6. Bluegill proportional and relative stock indices collected from Lake Nelson, 2009-2015 spring electrofish sampling.

Year	PSD	RSDp
2015	29	1.7
2014	51	2.6
2013	27	3.4
2012	25	0.0
2009	10	0.5

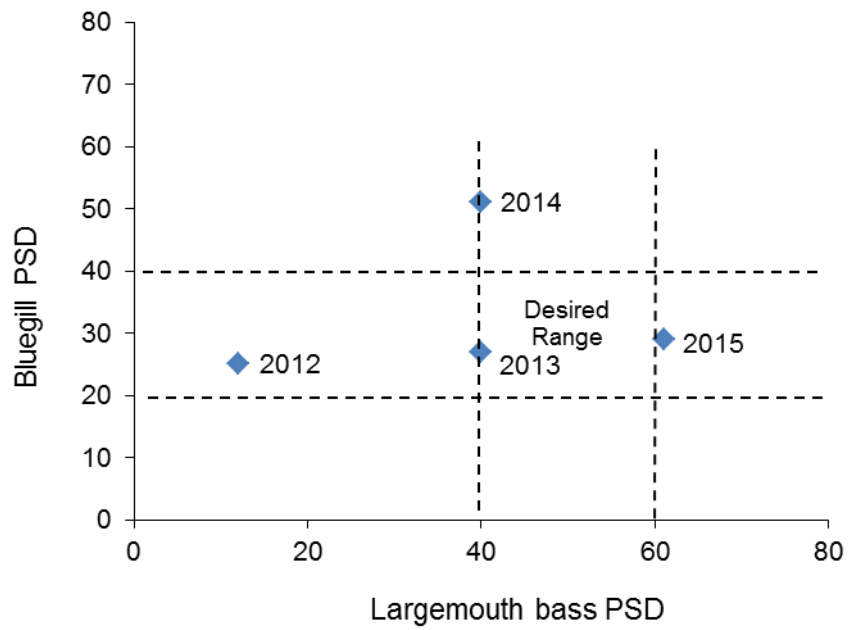


Figure 4. Largemouth bass/bluegill PSD relationship based on electrofishing surveys at Lake Nelson, 2012-2015.