

HARRIS RESERVOIR MANAGEMENT REPORT

Spring 2009

Prepared by

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Introduction

Largemouth bass and spotted bass have been sampled annually from Harris Reservoir (with exceptions of 1994, 1999, and 2008) since implementation of the 330 mm (13 inches) to 406 mm (16 inches) slot limit put into effect on 1 October 1993. Data collected has been used to evaluate the effects of the slot limit on the bass populations in terms of catch-per-effort, relative abundance, condition and growth rates. The slot limit was removed from spotted bass in 2006 due to stockpiling of smaller spotted bass that was a result of limited harvest of fish below the 330 mm – 406 mm (13-16 inch) slot limit (Andress and Catchings 2007). The slot limit remains in effect for largemouth bass. For reference in this report, stock size (>200 mm; 8 inches) fish with total lengths below the slot (< 330 mm; 13 inches) are reported as group 1, group 2 have total lengths that fall within the slot limit (330 – 406 mm; 13-16 inches), and group 3 have total lengths larger than the slot limit (> 406 mm; 16 inches). Pertinent characteristics of Lake Harris can be found in Table 1. Readers are encouraged to view the tables and figures located in the appendix of this report. An anglers guide to Alabama Reservoir Reports, which provides detailed information about Alabama reservoir reports can be found at the web address provided below: <http://www.outdooralabama.com/fishing/freshwater/where/reservoirs/guide.pdf>.

Methods

Largemouth bass and spotted bass were targeted during electrofishing surveys on April 20, 2009 and April 22, 2009. Six sites above (Figure 1), and six sites below (Figure 2) the Hwy 48 bridge were randomly selected as sampling locations. Electrofishing gear consisted of a boat mounted, Smith Root 5.0 GPP with boom electrodes that delivered 5-6 amperes at 800 – 1000 volts of pulsed direct current. Target species (largemouth bass and spotted bass) were measured to the nearest millimeter, and weighed to the nearest gram. Otoliths were extracted to obtain age, growth and mortality estimates, and were read whole view by District 2 personnel. Suspect ages, or otoliths that were not readable in whole view prompted sectioning (Maceina 1988) to authenticate age. Fish collection and general data analyses were conducted according to the guidelines of the Alabama Reservoir Management Manual (Cook 1999). Additional statistical tests (T-tests and Analysis of Variance with Student-Newman-Keuls post hoc comparisons) were used to compare largemouth bass and spotted bass data between time periods. Largemouth Bass time periods were pre-regulation (before slot limit) and post regulation samples (last five

samples). Spotted bass data were compared over three time periods, including: pre-regulation, during regulation, and post regulation. Tournament catch statistics for bass were collected from the Bass Anglers Information Team (BAIT) results from 2008 (Abernethy 2009). Tournament data from 2009 will be published during spring 2010.

Results

Largemouth Bass

A total of 129 largemouth bass were collected at a rate of 21/hr during electrofishing surveys, which is the same as the lake average (21/hr) catch rate (Table 2). Catch rates at Lake Harris have historically been low, and stock size through preferred size (200 mm – 381 mm) largemouth bass catch rates are generally below the lower 25th percentile when compared to other reservoirs in Alabama (Figure 3). In 2009, catch rates of preferred-size (P-M; 381 mm – 510 mm) size largemouth bass approached the statewide mean (Figure 3). Since implementation of the slot limit, the catch rate of largemouth bass greater than 16 inches (group 3) has improved significantly (Table 3).

In 2009, relative stock density indices were similar to, or exceeded the statewide mean for quality size through memorable size largemouth bass (Figure 4). And, over the last five samples, the relative stock density of quality-size (Q-P; 300mm – 381mm) largemouth bass has approached or exceeded the statewide upper 75th percentile (Figure 4). Preferred-size largemouth bass were collected at a record high density (RSD-P = 45) during 2009 (Table 2 , Figure 4). The slot limit has continued to produce larger fish for anglers, as the relative density of bass in group 2 (13-16), and group 3 (>16) has increased since the slot limit was imposed (Figure 5).

Relative weight was low (< 90), and fell below the lake average for all size groups of largemouth bass (Table 2). No difference in relative weight was detected between pre-regulation and post-regulation time periods for largemouth bass in size groups 1, 2, and 3, but a general trend of slightly poorer condition was seen across the three groups (Table 3)

Total annual mortality from catch-curve analysis was 29% for largemouth bass ($R^2 = 0.86$; $P < 0.0001$; Figure 6). The 2007 creel survey resulted in 234 harvested bass, of which 33 were largemouth bass and 201 were spotted bass. A total of 2,044 bass were caught, which indicates that less than 13% were harvested.

Largemouth bass ranged from 98 mm to 607mm total length, and from 1 to 12 years old (Table 4; Figure 7). Age-1 largemouth bass represented about 34% of the fish collected, which coupled with the high sub-stock ratio, is a good indication that a strong year-class was produced in 2008 (Table 2; Table 4). The von Bertalanffy growth curve predicted that it took about 1.5 years for largemouth bass to reach a harvestable size of 10 inches, and about 2.5 years to reach 12 inches (Figure 8). Predicted lengths-at-age indicated that largemouth bass in the slot limit were about 3-5 years old. Mean lengths-at-age of largemouth bass were high for age-1, age-2, and age-3 fish, and were similar to the statewide average for fish age-4 and age-5 fish (Figure 8). Growth for age 3 to 5 year old largemouth bass was not significantly different between pre-regulation and the last five samples (Table 5). However, age-1 and age-2 largemouth bass are now growing slightly faster than they did during the pre-regulation time period (Table 5). The mean age of largemouth bass in group 1, group 2, and group 3 have not changed between pre-regulation and post regulation time periods (Table 3).

Spotted Bass

The catch rate (22/hour) of spotted bass (N=129) increased compared to the 2007 sample, but was below the lake average catch rate of 31/hour (Table 2; Figure 10). Catch rates for stock size spotted bass were much lower than the lake average (Table 2; Figure 10). Since the slot limit has been removed, catch rates of memorable size spotted bass have been higher than during the slot limit, and in 2009 the catch rate was higher than the lake average (Figure 10).

Stock density indices increased for sub-stock, quality, preferred, and memorable size spotted bass (Table 2). Quality size and memorable size spotted bass have increased since the slot limit was removed, and the relative stock density of both size groups was higher than the statewide average (Figure 11). The number of quality size spotted bass since the slot limit was removed in 2006 has been higher than the upper 75th percentile for Alabama reservoirs (Figure 11). Group 2 (in the slot) and Group 3 (larger than the slot) fish have increased since the slot limit was removed, and group 1 fish have declined (Figure 12).

Relative weight increased for stock through preferred size spotted bass compared to 2007, and all size groups displayed relative weights similar to or higher than the lake average (Table 2). Group 1 spotted bass had higher relative weights during the slot, and post-slot, than

during the pre-slot time period (Table 3). Group 3 spotted bass relative weight was higher post-slot than during the pre-slot time period (Table 3).

Catch-curve analysis was performed on age-2 through age-7 spotted bass. Total annual mortality was estimated at 53% ($R^2 = 0.96$; $P = 0.0007$; Figure 13). Examination of residuals from the catch-curve regression suggested relatively stable year-class production for Lake Harris spotted bass over the last several years (Figure 13).

Spotted bass ranged from 92 mm to 507mm, and from 1 to 7 years old (Table 6; Figure 14). Inversion of the von-Bertalanffy equation predicted that spotted bass reaches harvestable size (10 inches) in about 2 years, and 12 inches in 2.7 years (Figure 15). Spotted bass growth estimates from 2009, indicated that from age-2 to age-5, growth was very similar to the statewide average (Figure 16). Mean age for group 1 and group 2 spotted bass was significantly higher during and after the slot limit, than before the slot limit was imposed (Table 3). Throughout the different time periods associated with the slot limit, the only significant differences in mean lengths-at-age were for age-1 and age-2 spotted bass. Thus, age-1 spotted bass were longer after the slot limit was removed, and age-2 spotted bass were shorter during the slot limit regulation (Table 5).

The 2008 Bass Angler Information Team (B.A.I.T.) report indicated that Lake Harris received 20 tournament reports, and was ranked 1st in quality indicator points (Abernethy 2009). The rankings are based on five quality fishing indicators compiled from tournament bass anglers. The indicators include percent success of anglers, average weight of fish caught, bass per angler-day, pounds per angler-day, and hours fished per each bass caught > 5 lbs. Harris ranked 1st in percent success, 13th in average weight, 3rd in bass per angler-day, 7th in pounds per angler-day, and 4th in hours per bass > 5 lbs (Abernethy 2009). The removal of the slot limit on spotted bass has allowed anglers to weigh-in more fish, which improves the percent success, bass per angler day, and pounds per angler day categories. Of the fish reported during the 2008 B.A.I.T. report, 88% were spotted bass, and anglers are encouraged to continue removing small spotted bass from Lake Harris to improve growth and condition of the largemouth bass and spotted bass populations.

Summary

Spotted bass harvest in the 330 mm to 406 mm size range, in conjunction with harvest of both largemouth bass and spotted bass less than 330 mm total length, should result in increased numbers of desirable bass available to anglers. During the 2007 creel survey, only about 12% of the bass caught were harvested, and of the harvested bass, about 86% were spotted bass. The fishing and population structure has improved at Lake Harris, and anglers are encouraged to continue harvesting smaller bass so that larger bass can be produced in the infertile water body. The stocking history for Lake Harris is displayed in Table 7.

Conclusions

1. Alabama Wildlife and Freshwater Fisheries should continue to educate anglers about the necessity of bass harvest below the slot limit, so that growth and condition of bass in and above the slot can improve.
2. We do not recommend any changes to the current slot limit at this time.
3. Alabama Wildlife and Freshwater Fisheries should continue to encourage bass clubs fishing Lake Harris to participate in the B.A.I.T. program.

Literature Cited

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APPENDIX A
Tables and Figures

Table 1. Morphometric, physical, and chemical characteristics of Lake Harris.

Surface area	10,660 acres
Drainage area	1,440 sq. mi.
Full pool elevation	793 feet-msl
Mean annual fluctuation	11.6 feet
Shoreline distance	272 miles
Shoreline development index	18.8
Mean depth	44 feet
Maximum depth	125 feet
Outlet depth	746-764 feet
Total dissolved solids	52 mg/l
Morphoedaphic index	1.18 TDS/mean depth(ft) (Ryder 1965)
Growing season	229 frost free days (Jenkins 1967)
Year of Impoundment	1983

Table 2. Relative stock density, catch per effort, and relative weight of largemouth bass and spotted bass from Harris Reservoir from 1991 to 2009.

Species	Gear	Number Samples	TOTAL NUMBER, CPE, PERCENT OF SAMPLE AND Wr																TOTAL									
			SUBSTOCK			RSD-S				RSD-Q				RSD-P				RSD-M				RSD-T				no.	cpe	
			no.	cpe	pct*	no.	cpe	pct.	Wr	no.	cpe	pct.	Wr	no.	cpe	pct.	Wr	no.	cpe	pct.	Wr	no.	cpe	pct.	Wr			
Largemouth Bass	1991	Electro	10	24	4.8	24	47	9.4	47	81	33	6.6	33	83	17	3.4	17	84	3	0.6	3	99					124	24.8
	1992	Electro	10	110	22.0	136	54	10.8	67	83	21	4.2	26	83	5	1.0	6	87	1	0.2	1	90					191	38.2
	1993	Electro	7	17	4.8	16	62	17.7	58	86	30	8.5	28	85	11	3.1	10	87	4	1.1	4	100					124	35.4
	1995	Electro	10	43	8.6	46	40	8.0	42	82	46	9.2	49	81	8	1.6	9	89									137	27.4
	1996	Electro	10	16	3.2	18	30	6.0	34	83	40	8.0	45	84	17	3.4	19	81	1	0.2	1	88					104	20.8
	1997	Electro	10	19	3.8	26	20	4.0	27	81	36	7.2	49	78	15	3.0	20	76	3	0.6	4	98					93	18.6
	1998	Electro	10	19	3.8	25	20	4.0	26	85	37	7.4	48	84	18	3.6	23	85	2	0.4	3	101					96	19.2
	2000	Electro	10	9	1.8	11	19	3.8	22	90	40	8.0	47	85	20	4.0	24	87	6	1.2	7	101					94	18.8
	2001	Electro	10	6	1.2	10	8	1.6	14	80	34	6.8	58	79	14	2.8	24	77	3	0.6	5	102					65	13.0
	2002	Electro	10	10	2.0	13	25	5.0	32	86	23	4.6	29	87	25	5.0	32	89	4	0.8	5	97	1	0	1	124	87	17.6
	2003	Electro	10	8	1.6	15	10	2.0	19	82	27	5.4	52	84	15	3.0	29	87									60	12.0
	2004	Electro	10	15	3.0	28	14	2.8	26	85	18	3.6	33	88	17	3.4	31	81	5	1.0	9	86					69	13.8
	2005	Electro	10	2	0.4	2	22	4.4	27	83	35	7.0	43	82	17	3.4	21	83	7	1.4	9	89					83	16.6
	2006	Electro	10	13	2.6	15	12	2.4	14	83	36	7.2	42	83	26	5.2	31	85	10	2.0	12	94	1	0	1	116	98	19.6
	2007	Electro	10	15	3.0	13	28	5.6	24	81	46	9.2	40	80	36	7.2	31	82	6	1.2	5	89					131	26.2
	2009	Electro	12	29	4.8	29	20	3.3	20	82	31	5.2	31	81	45	7.5	45	83	4	0.7	4	85					129	21.5
Lake Average				4.5	27		5.7	31	83		6.8	41	83		3.8	23	84		0.9	5	94		0	0	120		21.5	

Species	Gear	Number Samples	TOTAL NUMBER, CPE, PERCENT OF SAMPLE AND Wr																TOTAL									
			SUBSTOCK			RSD-S				RSD-Q				RSD-P				RSD-M				RSD-T				no.	cpe	
			no.	cpe	pct*	no.	cpe	pct.	Wr	no.	cpe	pct.	Wr	no.	cpe	pct.	Wr	no.	cpe	pct.	Wr	no.	cpe	pct.	Wr			
Spotted Bass	1991	Electro	10	78	15.6	82	64	12.8	67	84	23	4.6	24	83	7	1.4	7	78	1	0.2	1	85					173	34.6
	1992	Electro	8	68	17.0	67	81	20.2	80	86	16	4.0	16	88	3	0.7	3	88	1	0.2	1	76					169	42.3
	1993	Electro	10	46	9.2	51	64	12.8	70	88	22	4.4	24	89	5	1.0	5	84									137	27.5
	1995	Electro	10	48	9.6	46	74	14.8	70	86	20	4.0	19	90	11	2.2	10	85									153	30.6
	1996	Electro	10	24	4.8	37	35	7.0	54	82	17	3.4	26	82	13	2.6	20	82									89	17.8
	1997	Electro	10	49	9.8	40	69	13.8	56	86	22	4.4	18	82	31	6.2	25	78	1	0.2	1	83					172	34.4
	1998	Electro	10	27	5.4	28	46	9.2	47	92	28	5.6	29	91	24	4.8	24	85									125	25.0
	2000	Electro	10	24	4.8	22	53	10.6	48	92	30	6.0	27	91	24	4.8	22	89	3	0.6	3	103					134	26.8
	2001	Electro	10	68	13.6	49	61	12.2	44	87	31	6.2	22	87	45	9.0	32	86	2	0.4	1	91					207	41.4
	2002	Electro	10	67	13.4	45	85	17.0	57	92	37	7.4	25	90	23	4.6	15	86	4	0.8	3	87					216	43.2
	2003	Electro	10	36	7.2	32	65	13.0	59	91	21	4.2	19	85	20	4.0	18	87	5	1.0	5	91					147	29.4
	2004	Electro	10	35	7.0	32	50	10.0	46	93	21	4.2	19	92	35	7.0	32	90	2	0.4	2	89	1	0.2	1	93	144	28.8
	2005	Electro	10	10	2.0	5	98	19.6	50	86	48	9.6	24	88	46	9.2	23	87	4	0.8	2	98	1	0.2	1	91	207	41.4
	2006	Electro	10	12	2.4	7	105	21.0	61	88	32	6.4	19	89	31	6.2	18	89	4	0.8	2	87					184	36.8
	2007	Electro	10	18	3.6	29	31	6.2	49	85	23	4.6	37	86	7	1.4	11	86	2	0.4	3	91					81	16.2
	2009	Electro	12	41	6.8	47	31	5.2	35	88	34	5.7	39	91	18	3.0	20	88	5	0.8	6	90					129	21.5
Lake Average				8.3	39		12.8	56	88		5.3	24	88		4.3	18	86		0.4	2	89		0	0	92		31.1	

Table 3. The number collected, mean catch per effort, mean age and mean relative weight of largemouth bass and spotted bass collected between slot limit regulation time periods. For largemouth bass, pre-slot limit and the 5 most recent samples are compared. Spotted bass comparisons are for pre-slot, during slot, and the most recent samples post- slot. Means with the same letter are not significantly different at an alpha level of 0.05. Size group 1 are fish 8-12 inches, group 2 are 13-16 inches, and group 3 are greater than 16 inches.

Largemouth Bass

SIZE		Number Collected		CPE*		Mean Age (yrs)		Mean Wr	
GROUP	SPECIES	PRE	POST	PRE	POST	PRE	POST	PRE	POST
1	LMB	199	151	7.2 a	2.9 b	2.0 a	2.0a	83.7 a	82.2 a
2	LMB	64	173	2.5 a	3.3 a	3.7 a	3.9a	83.4 a	82.0 a
3	LMB	23	112	0.9 a	2.2 b	6.1 a	6.6a	90.4 a	85.8 a

Spotted Bass

SIZE		Number Collected			CPE*			Mean Age			Mean Wr		
GROUP	SPECIES	PRE	SLOT	POST	PRE	SLOT	POST	PRE	SLOT	POST	PRE	SLOT	POST
1	SPB	234	817	90	7.1a	7.9a	4.0b	2.1a	2.2b	2.2b	86.4a	89.0b	88.4b
2	SPB	22	379	42	1.85a	4.0b	1.95a	3.1a	3.7b	3.2b	86.7a	86.5a	87.1a
3	SPB	4	75	11	0.2a	0.9b	0.5a	4.5a	5.8a	5.5a	82.4a	88.0ab	91.3b

* CPE is the number of fish per transect, or sample site.

Table 4. Age composition and mean lengths-at-age of largemouth bass from Harris Reservoir, Spring 2009.

Age	Year Class	Number	Percent	CPE	Mean TL	SE	Range
1	2008	44	34.1	8.8	184.8	5.2	98-251
2	2007	8	6.2	1.6	306.3	7.5	271-345
3	2006	16	12.4	3.2	347.3	9.5	228-391
4	2005	25	19.4	5.0	379.6	5.6	297-437
5	2004	8	6.2	1.6	421.3	19.7	345-500
6	2003	16	12.4	3.2	432.3	11.5	374-536
7	2002	5	3.9	1.0	440.0	19.0	396-486
8	2001	4	3.1	0.8	536.0	27.3	484-607
9	2000	1	0.8	0.2	554.0	-	-
10	1999	1	0.8	0.2	443.0	-	-
11	1998	0	0.0	0.0	0.0	-	-
12	1997	1	0.8	0.2	487.0	-	-
Total		129	100.0	25.8			

Table 5. Comparison of mean lengths-at age, through age-5 for largemouth bass (top) and spotted bass (bottom) between slot limit regulation time periods. For largemouth bass, the comparison is between pre-slot and the last five samples. For spotted bass, the pre- slot, during slot and post-slot time periods are compared.

Largemouth Bass

AGE	Number Collected		Mean Length (mm)		State Average
	PRE	POST	PRE	POST	
1	170	88	169 a	190 b	176
2	159	106	271 a	283 b	270
3	52	97	342 a	349 a	339
4	28	74	378 a	387 a	392
5	9	36	433 a	406 a	436

Spotted Bass

AGE	Number Collected			Mean Length (mm)			State Average
	PRE	SLOT	POST	PRE	SLOT	POST	
1	197	384	35	128 a	137a	148b	*
2	228	768	77	247 a	234b	249a	255
3	38	318	49	329 a	328a	334a	333
4	3**	153	12	380 a	373a	363a	386
5	1**	80	7	433a	401a	426a	428

* data not available

** low sample size negates statistical power for older age classes

Table 6. Age composition and mean lengths-at-age for spotted bass collected from Harris Reservoir, Spring 2009.

Age	Year Class	Number	Percent	CPE	Mean TL	SE	Range
1	2008	44	34.4	7.3	142.6	4.9	92-218
2	2007	40	31.3	6.7	266.3	4.8	198-372
3	2006	29	22.7	4.8	335.6	3.9	302-381
4	2005	6	4.7	1.0	382.0	7.3	362-411
5	2004	6	4.7	1.0	423.5	12.9	365-460
6	2003	2	1.6	0.3	464.5	10.5	454-475
7	2002	1	0.8	0.2	507.0	-	-
Total		128	100.0	21.5			

* one spotted bass was not aged

Table 7. Stocking history of Lake Harris by the Alabama Division of Wildlife and Freshwater Fisheries.

Species	Year	Number	Size (inches)
BLUEGILL SUNFISH	1983	100,000	1 - 2
CHANNEL CATFISH	1983	67,050	2 - 4
CHANNEL CATFISH	1983	57,565	2 - 4
CHANNEL CATFISH	2005	15,000	3 - 5
CHANNEL CATFISH	2005	16,000	3 - 5
HYBRID STRIPED BASS	1983	74,910	1 - 2
HYBRID STRIPED BASS	1983	85,840	1 - 3
HYBRID STRIPED BASS	1985	53,551	1 - 2
HYBRID STRIPED BASS	1989	19,000	1 - 2
LARGEMOUTH BASS *	1983	91,000	1 - 3
LARGEMOUTH BASS *	1986	1,500	1
LARGEMOUTH BASS *	1987	10,139	1
LARGEMOUTH BASS *	1988	21,300	1 - 2
LARGEMOUTH BASS	2006	85	6 - 20
THREADFIN SHAD	1986	3,500	3 - 6

* Florida strain largemouth bass

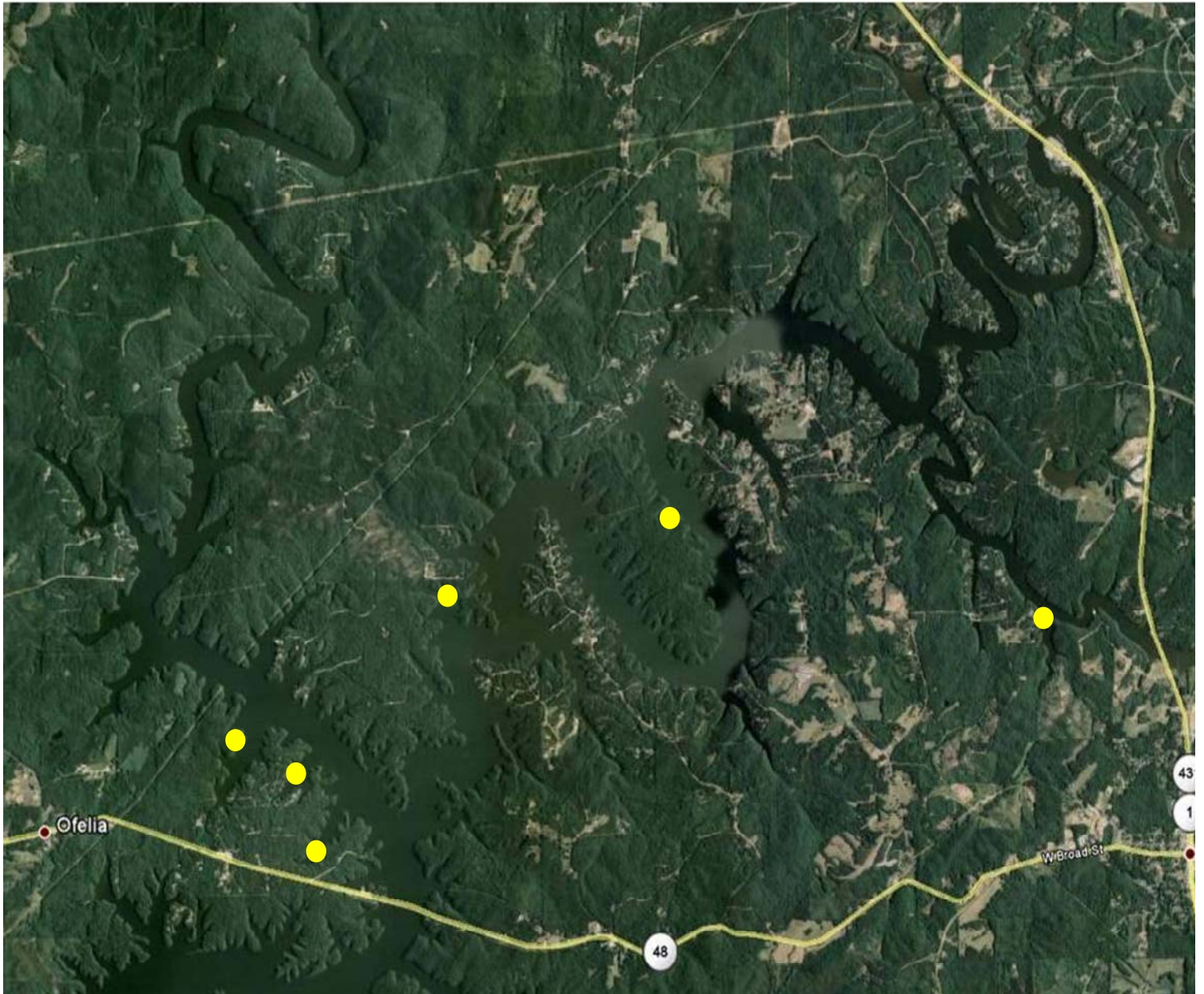


Figure 1. Harris Reservoir sample locations above the Hwy 48 Bridge in Spring, 2009.

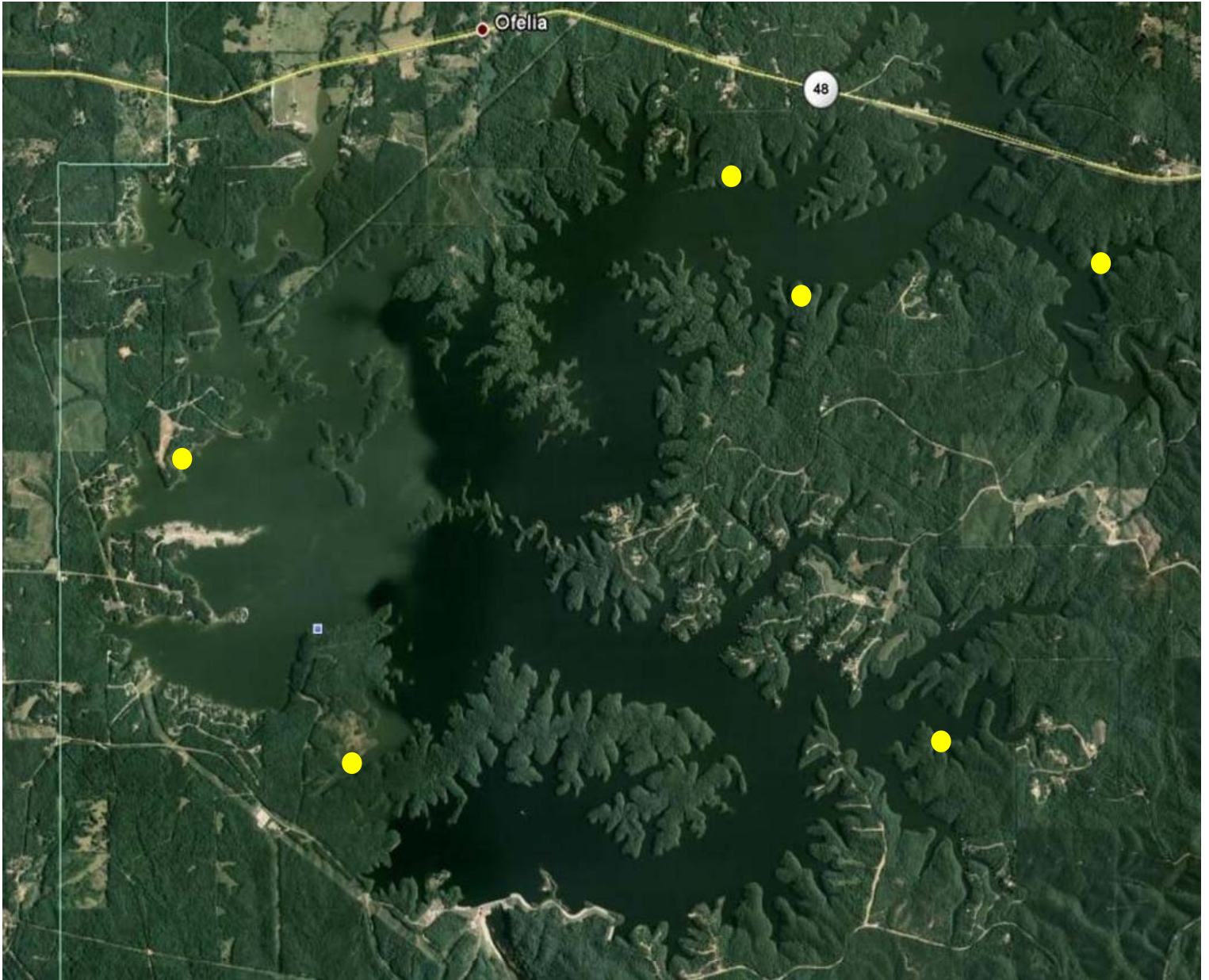


Figure 2. Harris Reservoir sample locations below the Hwy 48 Bridge in Spring, 2009.

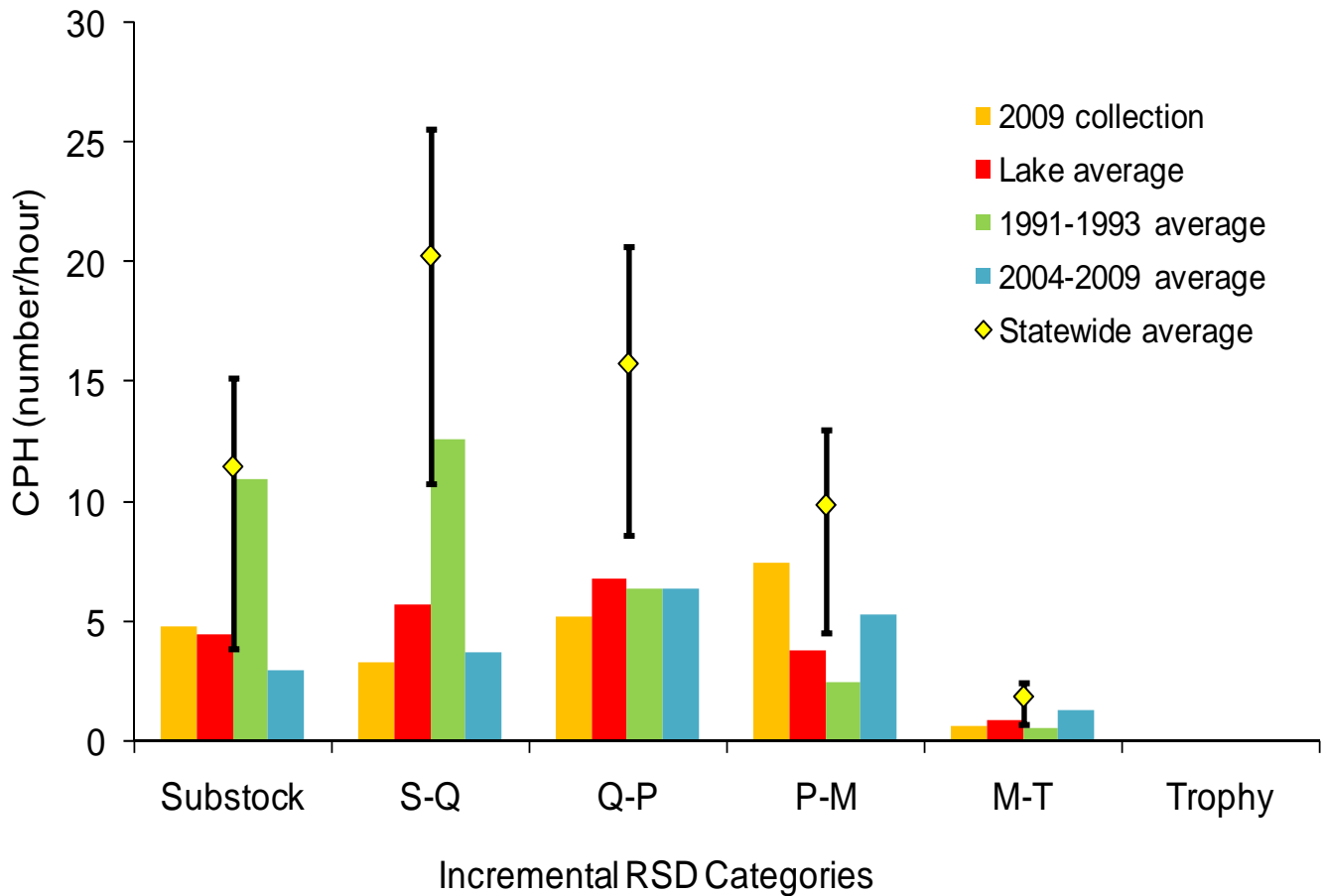


Figure 3. Catch per effort of each incremental RSD size group for largemouth bass collected from Harris Reservoir during the most recent sample (2009; orange bars), the pre-slot samples (1991-1992; green bars), the post slot (five most recent samples; blue bars), along with the statewide average catch rate (yellow diamonds; interquartile range in black) and the lake average catch rate (1991-2009; red bar).

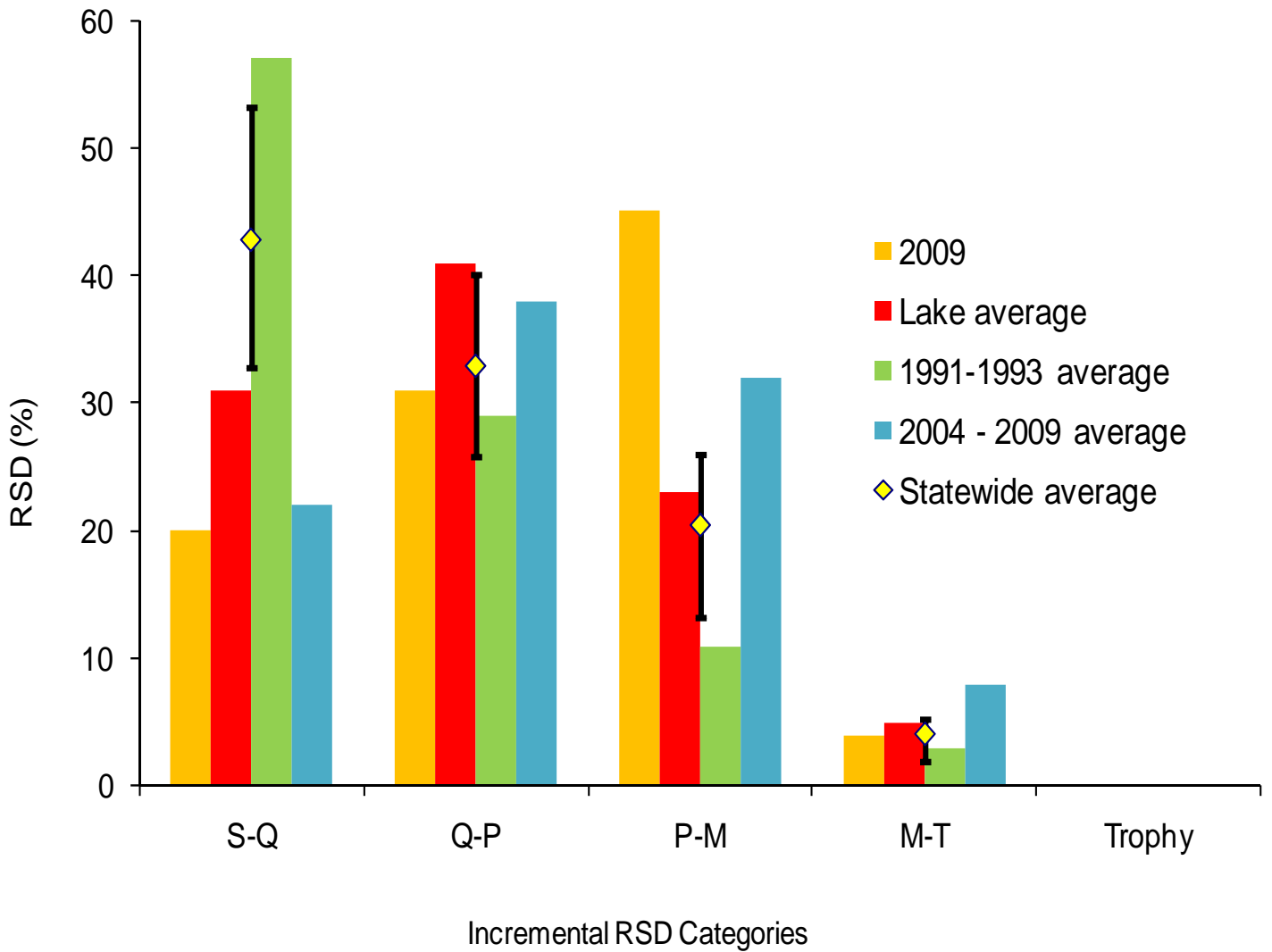


Figure 4. Relative stock density of each size group for largemouth bass collected from Harris Reservoir during the most recent sample (2009; orange bars), the pre-slot samples (1991-1992; green bars), the post slot (five most recent samples; blue bars), along with the statewide average catch rate (yellow diamonds; interquartile range in black) and the lake average catch rate (1991-2009; red bar).

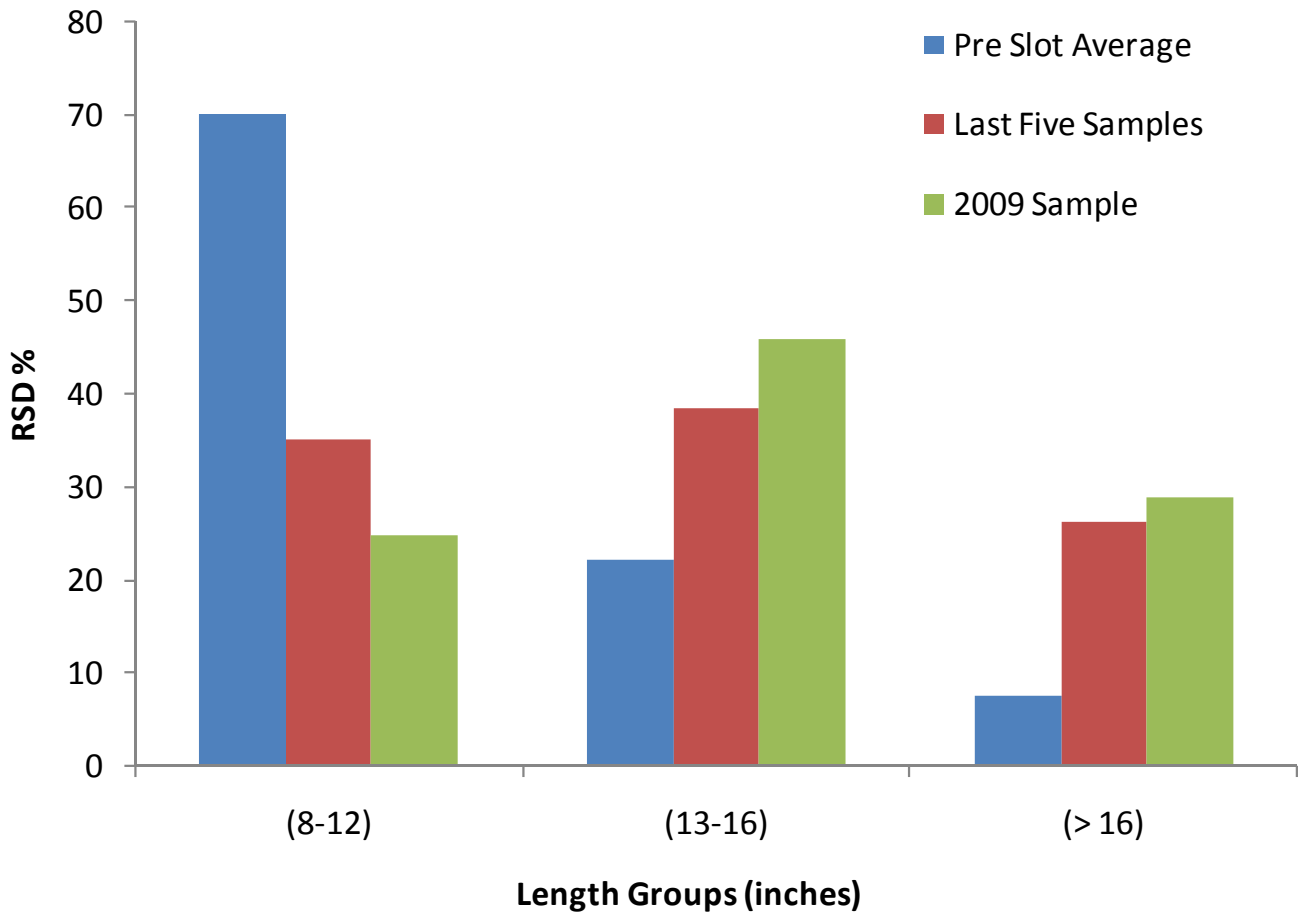


Figure 5. Relative stock density for largemouth bass length groups associated with the slot limit. 8-12 inch fish are below the slot, 13-16 inch fish are in the slot, and fish greater than 16 inches are above the slot. The blue bars are the average for each group from pre-slot samples, the red bars are from the last five samples (post slot), and the green bars are the 2009 sample values.

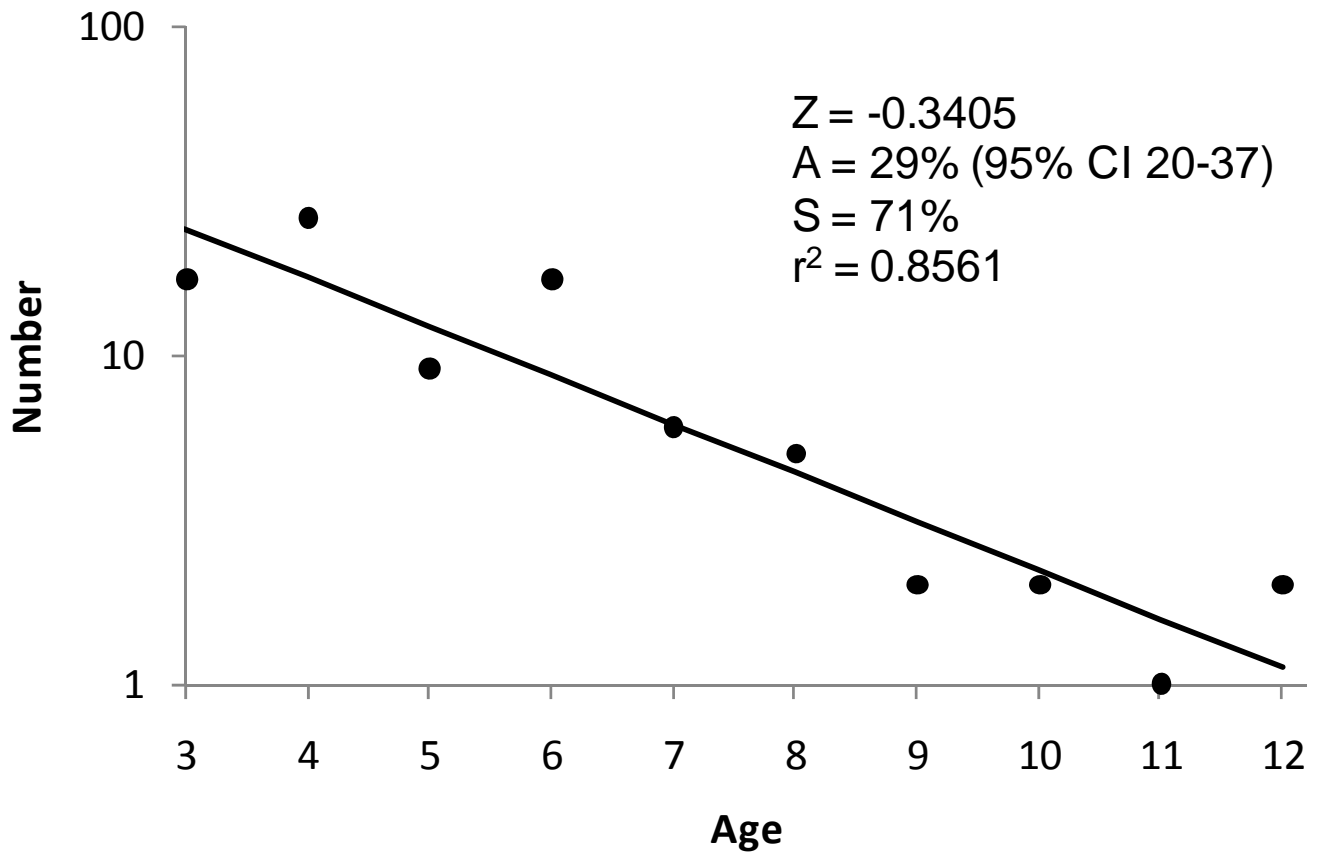


Figure 6. Catch-curve regression for largemouth bass collected from Harris Reservoir, Spring 2009.

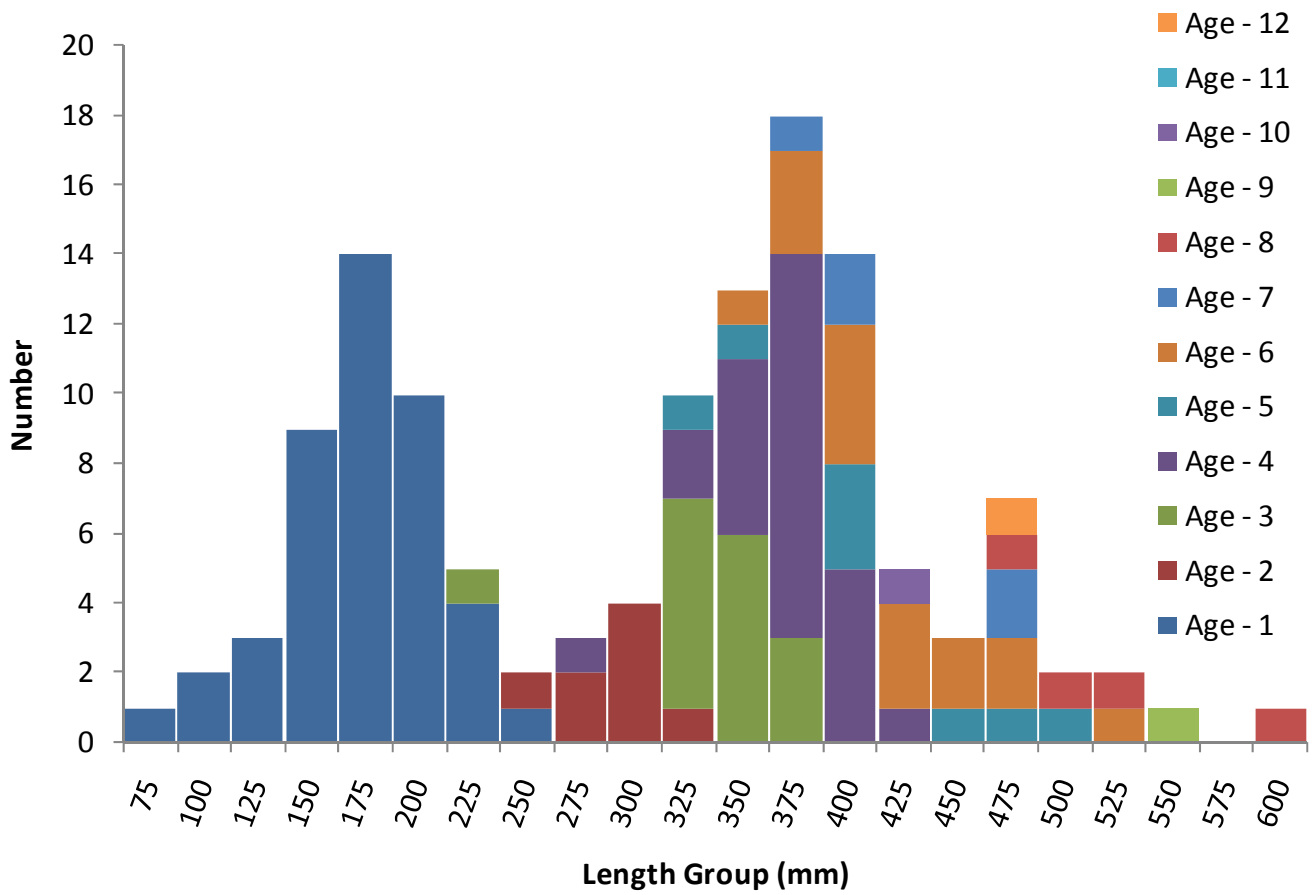


Figure 7. Age-frequency of largemouth (N=129) bass from Harris Reservoir, Spring 2009.

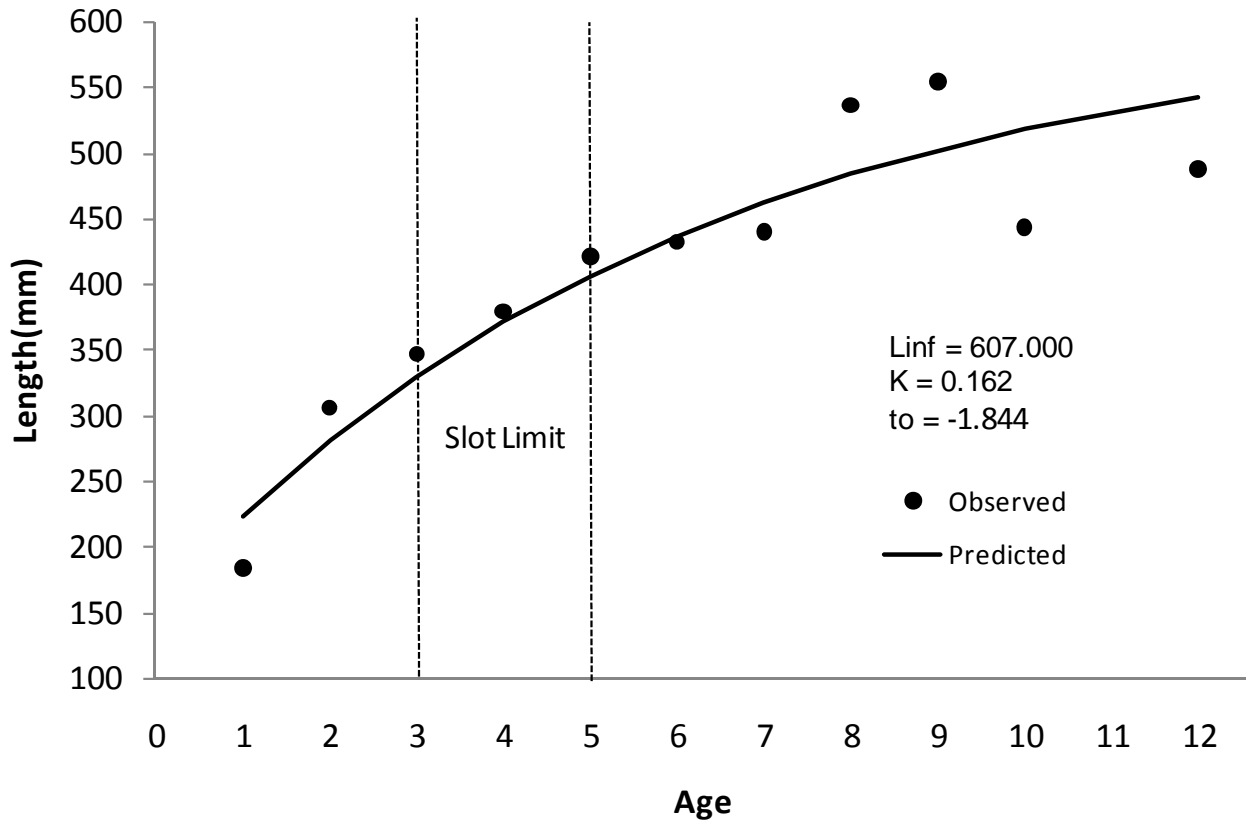


Figure 8. Mean lengths-at-age (dots) and the predicted von Bertalanffy growth (solid) curve for Harris Reservoir largemouth bass.

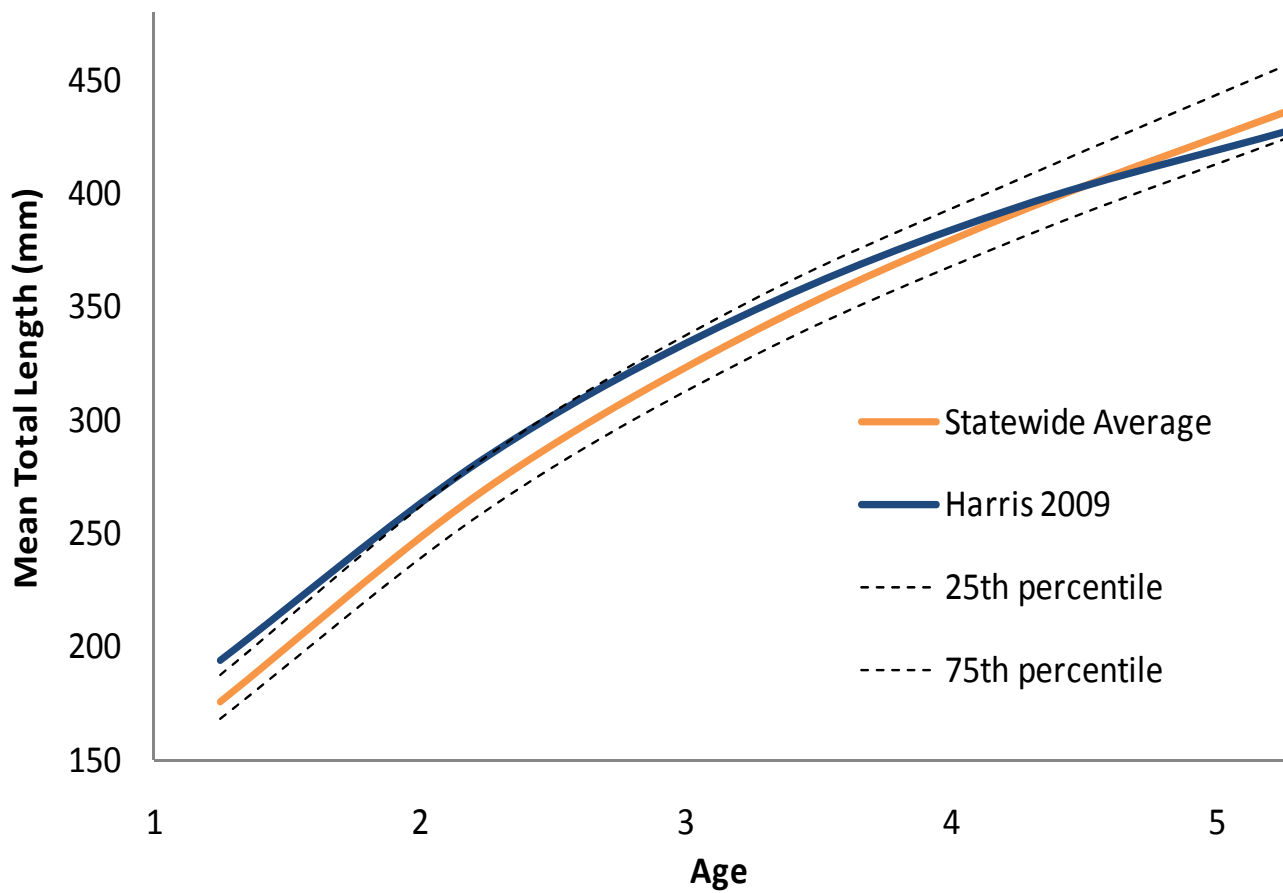


Figure 9. Predicted lengths from von Bertalanffy growth curves for largemouth bass from Harris 2009 (blue line), and the statewide average lengths-at-age (orange line) through age-5. The dotted lines are the 25th and 75th percentiles for statewide values.

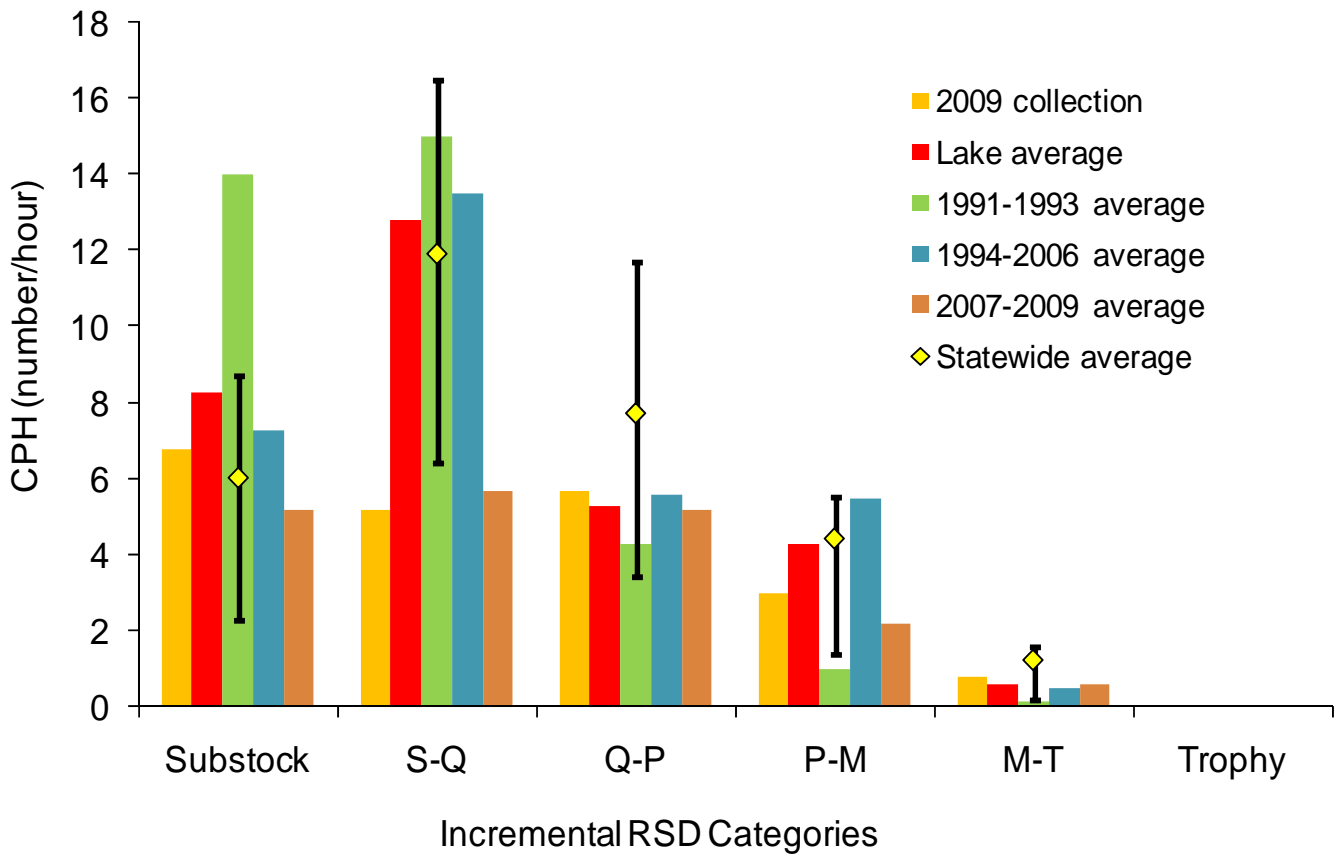


Figure 10. Catch per effort of each incremental RSD size group for spotted bass collected from Harris Reservoir during the most recent sample (2009; orange bars), the pre-slot samples (1991-1993; green bars), during the slot (1994-2006; blue bars), and after the slot was removed (2007-2009; brown bars), along with the statewide average catch rate (yellow diamonds; interquartile range in black) and the lake average catch rate (1991-2009; red bar).

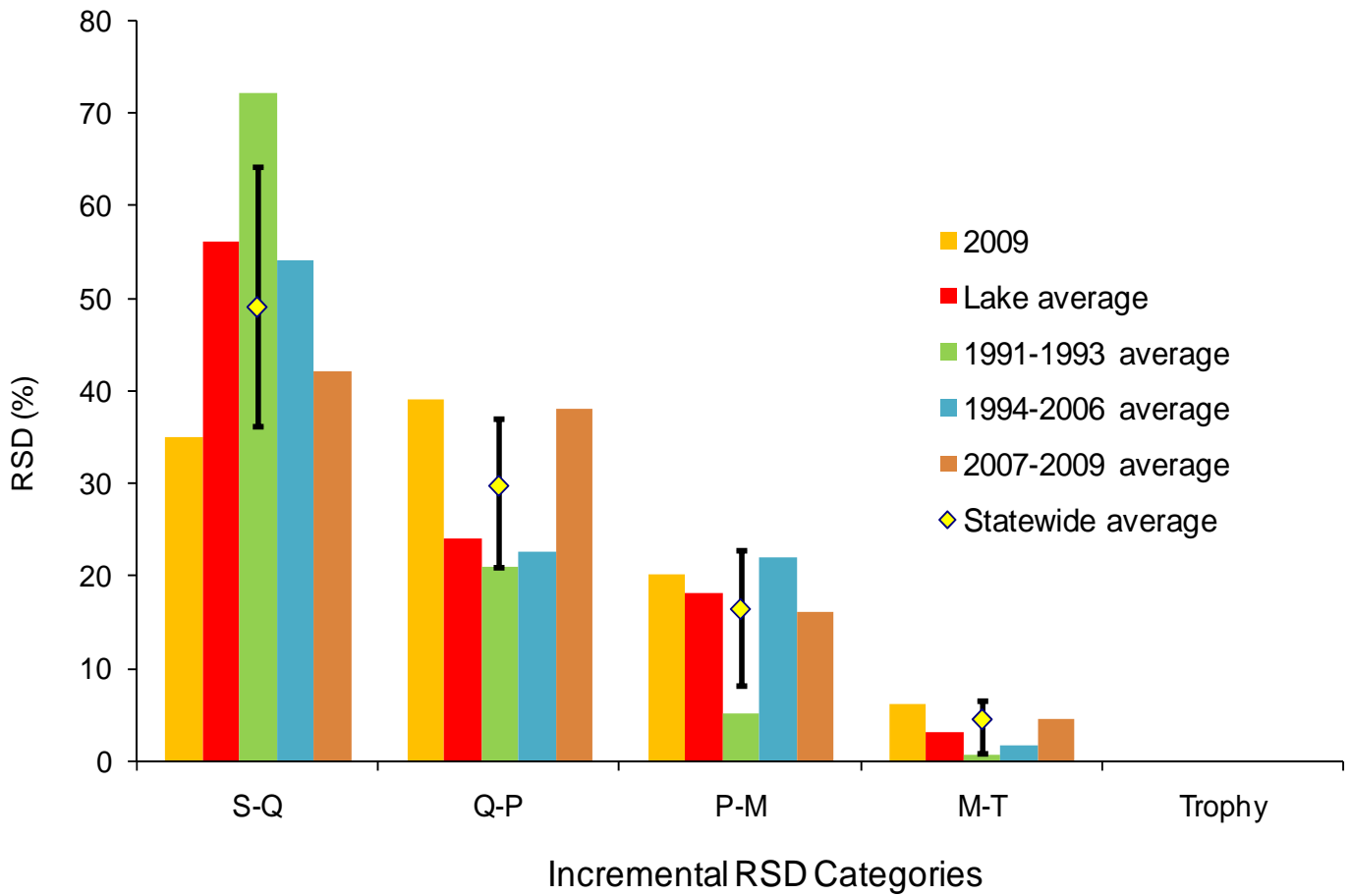


Figure 11. Relative stock density of each size group for spotted bass collected from Harris Reservoir during the most recent sample (2009; orange bars), the pre-slot samples (1991-1992; green bars), during the slot (1994-2006; blue bars), post slot (2007-2009), along with the statewide average catch rate (yellow diamonds; interquartile range in black) and the lake average catch rate (1991-2009; red bar).

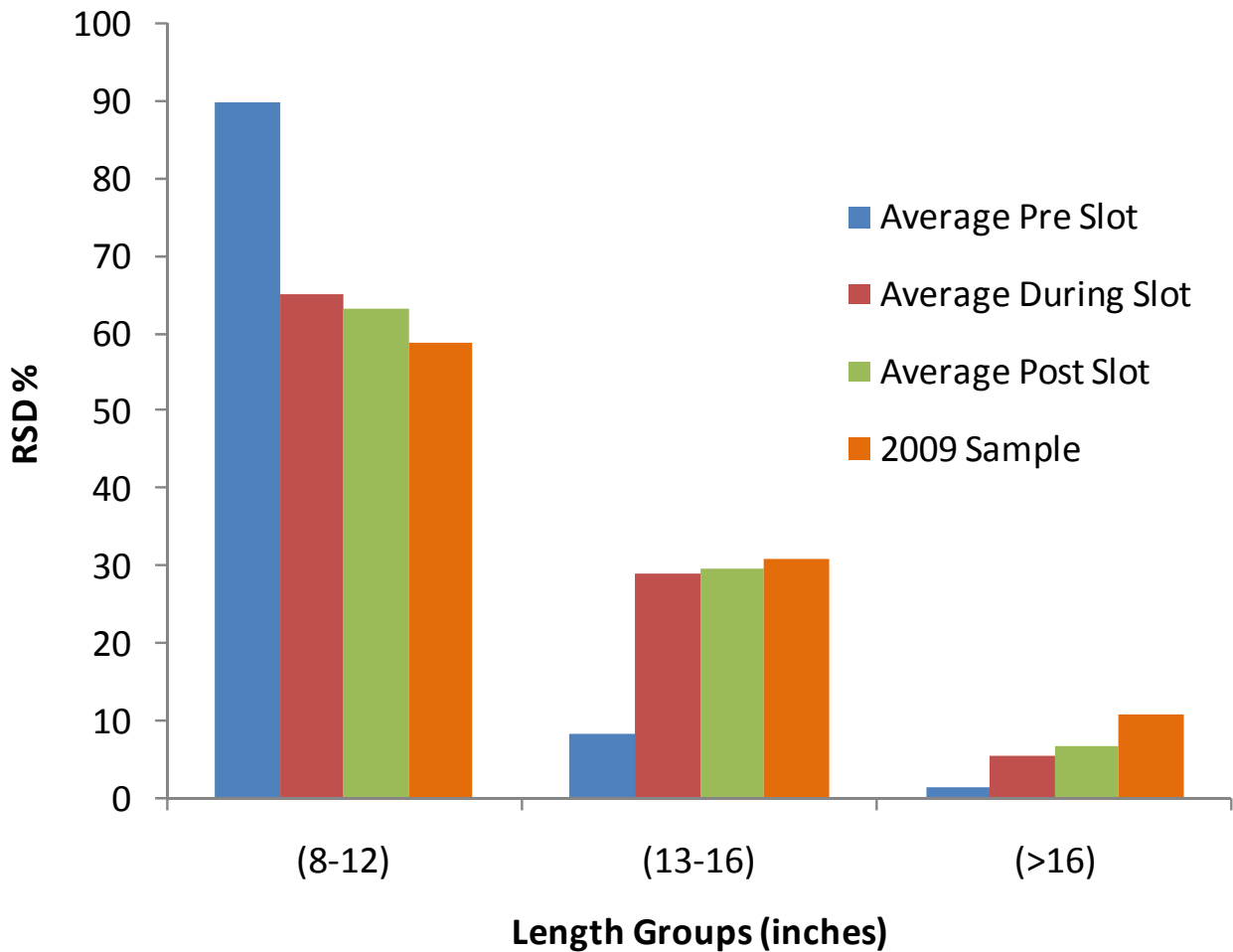


Figure 12. Relative stock density for spotted bass length groups associated with the slot limit. 8-12 inch fish are below the slot, 13-16 inch fish are in the slot, and fish greater than 16 inches are above the slot. The blue bars are the average for each group from pre-slot samples, the red bars are from samples during the slot, the green bars are samples after the slot was removed, and the orange bars are the 2009 sample. (Group designation for spotted bass is for comparison purposes only, as the slot was removed from spotted bass in 2006).

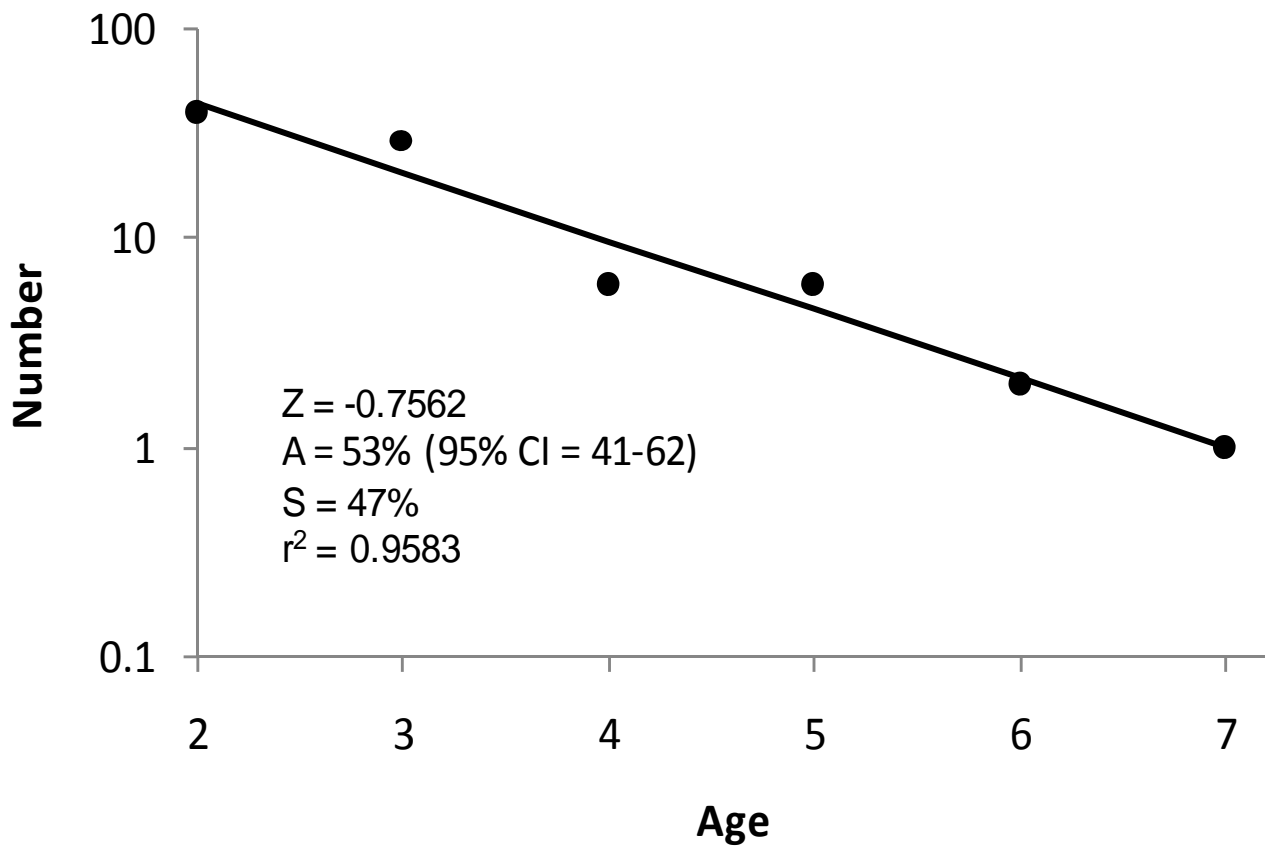


Figure 13. Catch-curve regression for spotted bass from Harris Reservoir, Spring 2009.

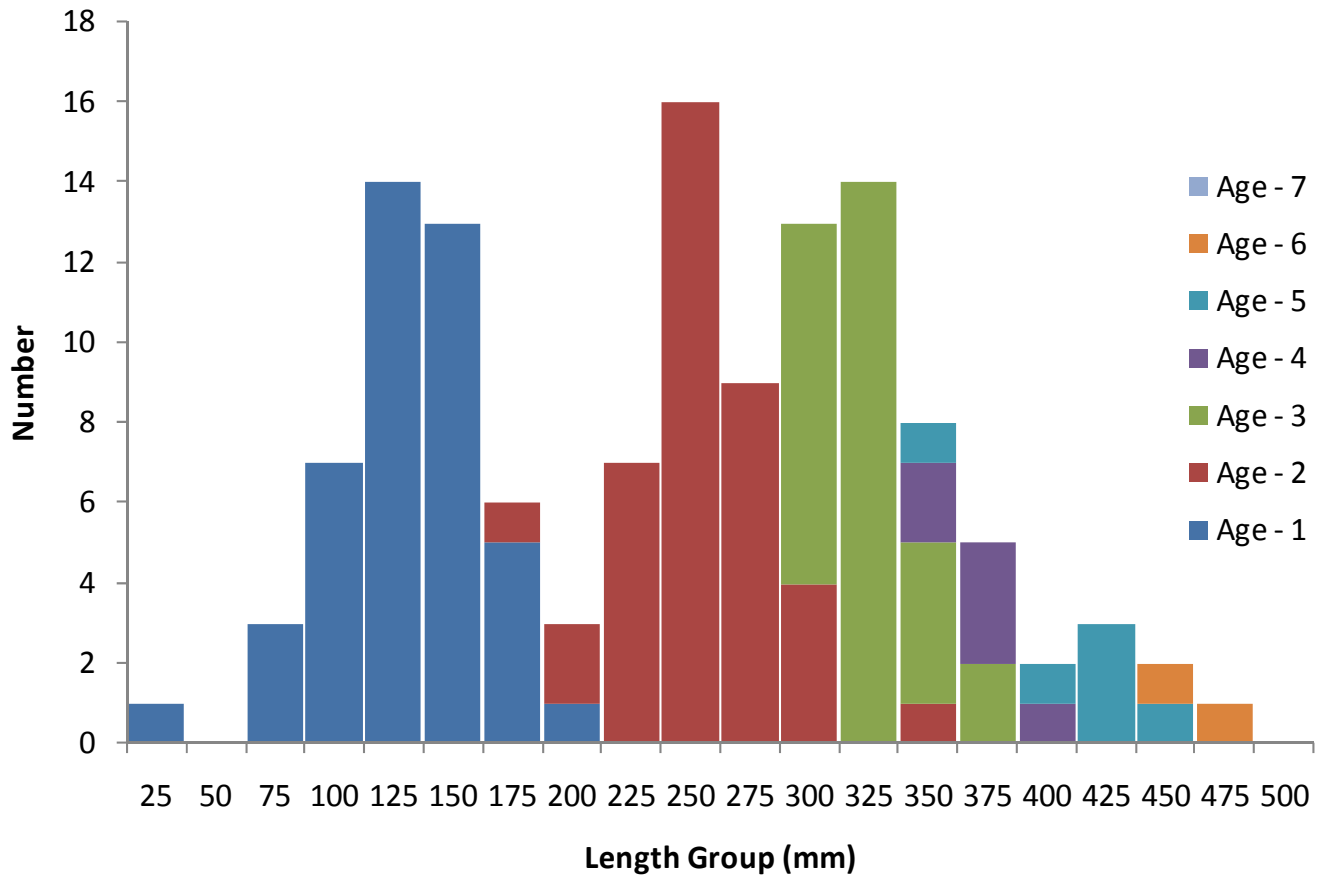


Figure 14. Age-frequency of spotted bass (N=129) collected from Harris Reservoir, Spring 2009.

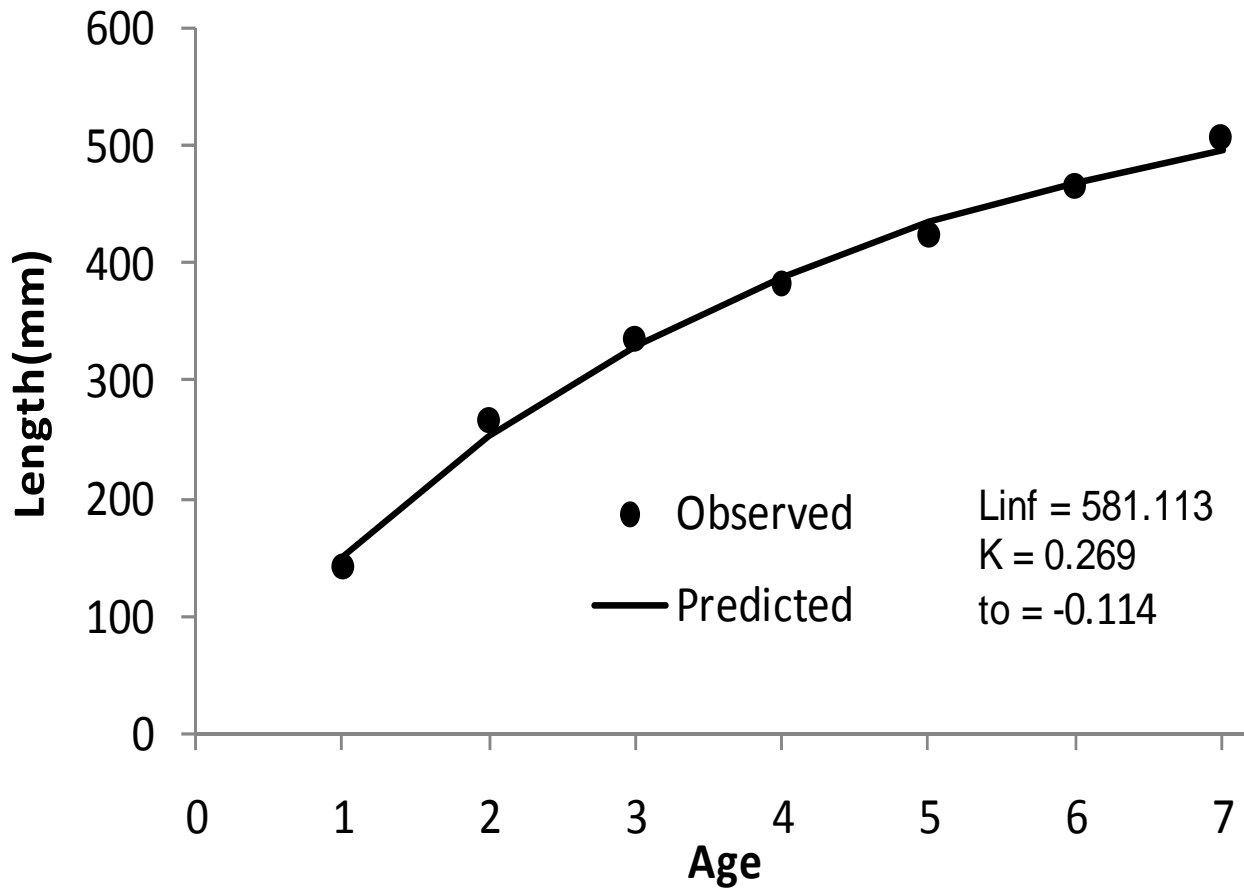


Figure 15. Mean lengths-at-age (dots) and the predicted von Bertalanffy growth curve (solid) for spotted bass from Harris Reservoir, Spring 2009.

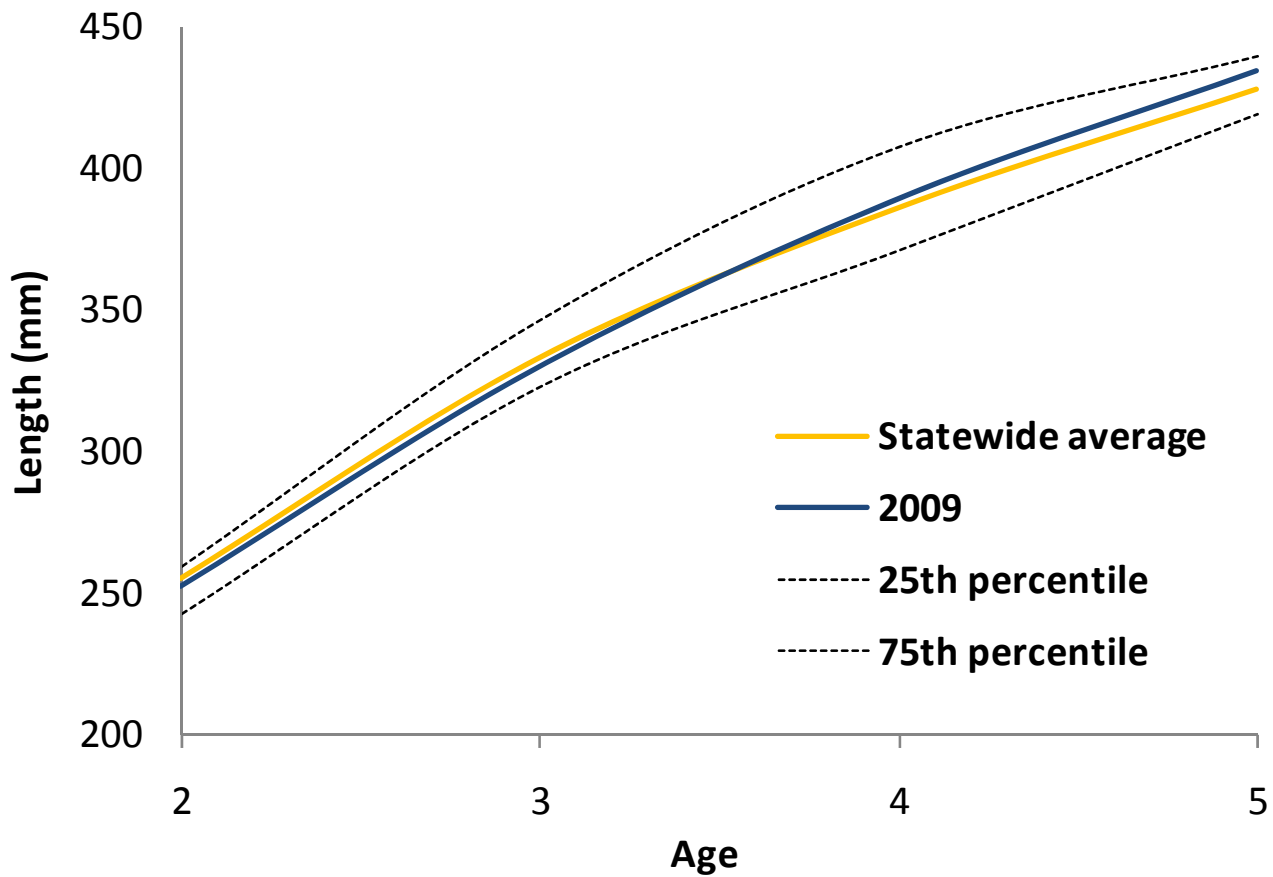


Figure 16. Predicted lengths from von Bertalanffy growth curves for spotted bass from Harris Reservoir 2009 (blue line), and the statewide average lengths-at-age (orange line) through age-5. The dotted lines are the 25th and 75th percentiles for statewide values.