

DEMOPOLIS RESERVOIR SPRING MANAGEMENT REPORT FY 2009

Prepared by

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Introduction

Demopolis Reservoir has been sampled every year since 1998, and in 1995, 1993, 1989, 1987, and 1985 (Haffner et al. 2008). A 14-inch (356 mm) minimum-length limit was implemented on all black bass in 1995. The goal of the length limit was to increase the abundance of preferred-size bass (fish \geq 380 mm, 15 inches) and increase anglers catch rates for bass of all sizes. In 2008, the largemouth bass population exhibited satisfactory size structure. However, poor recruitment resulted in lower catch rates of adult largemouth bass.

Methods

Largemouth bass were collected at 6 sites by electrofishing on April 22 and 23, 2009, according to the guidelines of the Alabama Reservoir Management Manual (1999). For only the second time in a decade, largemouth bass were not aged. Information from bass tournaments was collected through the Bass Angling Information Team (BAIT) and pertinent data was incorporated into this report.

Results and Discussion

Largemouth Bass

The catch per hour (CPH) of largemouth bass (N=455) was 150.5; an increase of 35% over last year's collection and 35% greater than the lake average (Table 2). The CPH of all incremental RSD size categories improved in 2009 and were at or exceeded the upper 75th percentile of CPH values at Demopolis (Table 2). The CPH of substock and S-Q fish were the second highest on record at Demopolis. However, the only size category to improve its incremental RSD value in 2009 was Q-P fish, though all incremental RSD values remained similar to the 2008 collection (Table 2).

The CPH of largemouth bass \geq 300 mm (12 inches), \geq 356 mm (14 inches), \geq 380 mm (15 inches) rose in 2009 and were above the lake average for Demopolis and well above the average of four pre-length limit collections (Figures 5, 6 and 7). The CPH of substock fish more than doubled in 2009 and represent the highest CPH value in over a decade (Table 2). The CPH of largemouth bass \geq 356 mm in 2009 jumped to an all-time high and was 65.5% higher than the average CPH of largemouth bass \geq 356 mm from 4 pre-length limit collections (Figure 6). The CPH of largemouth bass \geq 356 mm in 2009 was virtually identical to the CPH of largemouth bass \geq 356 mm in 2007.

The proportional stock density (PSD) was 46, nearly identical to the 2008 collection. The RSD380 slipped again to 12. Mean relative weight (Wr) values for all incremental RSD size categories ranged from 90 to 100 and were similar to the lake averages (Table 2).

BAIT data was reported from 172 anglers that fished in 8 tournaments in 2008. The number of bass weighed-in/angler-day was 2.92, slightly below the statewide average of 3.06 (Abernethy 2009). However, the number of bass and the pounds of bass weighed-in by Demopolis anglers have steadily improved each year since 2005. In 2008, the pounds of bass weighed-in/angler-day skyrocketed to an all-time high of 5.65. Only two bass 5 pounds or larger were caught by tournament anglers. The average weight of a bass weighed-in by Demopolis anglers slipped to 1.94 pounds; the percent success rose to 79% in 2008, yet understandably, was slightly less than the statewide average.

Summary

The CPH of all incremental RSD size categories improved in 2009 and were at or exceeded the upper 75th percentile of CPH values at Demopolis. The CPH of largemouth bass ≥ 356 mm in 2009 jumped to an all-time high and was 65.5% higher than the average CPH of largemouth bass ≥ 356 mm from 4 pre-length limit collections. The CPH of largemouth bass ≥ 380 mm (15 inches) rose in 2009 and was above the Demopolis average and well above the average of four pre-length limit collections. Recruitment appears to have improved. The number of bass and the pounds of bass weighed-in by Demopolis anglers have steadily improved every year since 2005 and the pounds of bass weighed-in/angler-day jumped in 2008 to an all-time high of 5.65. The bass fishery at Demopolis Reservoir will continue to be monitored and managed to maximize benefits to anglers. If and when it is appropriate, the minimum length limit may be modified.

Conclusions

1. Resample Demopolis Reservoir in 2010.
2. Maintain the 14-inch minimum-length limit regulation on all black bass.
3. Encourage the USACE to maintain an aggressive aquatic plant management program directed at preventing the spread of Cuban bulrush, water hyacinths, hydrilla and other non-native species.

4. Encourage more local bass clubs to participate in the BAIT Program.
5. Encourage the USACE to perform periodic, maintenance dredging of the mouths of major tributaries, in order to keep them open and accessible to anglers and boaters.

Literature Cited

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- Jenkins, R. M. 1967. The influence of some environmental factors on the standing crop and harvest of fishes in U. S. reservoirs. Pages 298-321 in Reservoir Fishery Resources Symposium. Southern Division American Fisheries Society, Bethesda, Maryland, USA.
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Appendix 1

Tables and Figures

Table 1. Morphometric, physical, and chemical characteristics of Demopolis Reservoir.

Surface area	10,000 acres
Drainage area	15,400 sq. mi.
Full pool elevation	75 feet-msl
Mean annual fluxuation	2 feet
Shoreline distance	500 miles
Shoreline development index	35.4 (Welch 1948)
Mean depth	12 feet
Maximum depth	56 feet
Outlet depth	Surface
Thermocline depth	None
Total dissolved solids	82 mg/l
Morphoedaphic index	6.8 TDS/mean depth(ft) (Ryder 1965)
Growing season	250 frost free days (Jenkins 1967)
Year of impoundment	1952

Table 2. Incremental relative stock density (RSD) catch per hour (CPH) and relative weight (Wr) of largemouth bass from spring electrofishing surveys at Demopolis Reservoir. The lake average and the pre and post 14-inch minimum length limit (MLL) averages have been calculated.

YEAR	NO.OF SITES	TOTAL EFFORT	SUBSTOCK			RSD S - Q				RSD Q - P				RSD P - M				RSD M - T				TOTAL	
			NO.	CPE	SSR	NO.	CPE	PCT.	Wr	NO.	CPE	PCT.	Wr	NO.	CPE	PCT.	Wr	NO.	CPE	PCT.	Wr	NO.	CPE
1987	3	0.77	17	22.1	20	44	57.1	53	83	28	36.4	34	95	8	10.4	10	96	3	3.9	4	101	100	129.9
1989	4	1.52	28	18.4	27	62	40.8	60	89	30	19.7	29	91	11	7.2	11	97	0	0.0	0		131	86.2
1993	6	3.00	117	39.0	64	104	34.7	57	93	51	17.0	28	98	24	8.0	13	102	4	1.3	2	113	300	100.0
1995	3	1.15	26	22.6	20	83	72.2	65	88	25	21.7	20	89	15	13.0	12	93	4	3.5	3	96	153	133.0
1998	4	2.09	28	13.4	19	68	32.6	46	92	49	23.5	33	92	25	12.0	17	93	6	2.9	4	95	176	84.3
1999	7	3.58	42	11.7	15	131	36.6	47	89	108	30.2	39	91	32	8.9	12	98	5	1.4	2	100	318	88.9
2000	4	1.98	28	14.2	12	111	56.1	47	92	99	50.1	42	93	26	13.1	11	92	0	0.0	0		264	133.5
2001	7	2.95	62	21.0	16	200	67.7	51	94	158	53.5	40	92	34	11.5	9	96	2	0.7	1	100	456	154.3
2002	7	3.54	59	16.6	19	159	44.9	50	101	106	29.9	33	102	48	13.5	15	96	5	1.4	2	100	377	106.4
2003	6	3.00	35	11.7	13	94	31.3	36	98	121	40.3	46	96	44	14.7	17	97	5	1.7	2	96	299	99.7
2004	6	3.02	26	8.6	10	88	29.2	34	94	121	40.1	46	92	53	17.6	20	96	0	0.0	0		288	95.4
2005	8	4.13	52	12.6	15	170	41.1	48	96	131	31.7	37	93	44	10.6	13	94	7	1.7	2	93	404	97.7
2006	8	4.17	18	4.3	6	114	27.4	37	97	147	35.3	47	96	46	11.0	15	96	4	1.0	1	98	329	79.0
2007	5	2.51	37	14.8	13	115	45.9	39	101	137	54.6	46	100	42	16.8	14	101	2	0.8	1	112	333	132.8
2008	8	4.13	49	11.9	12	227	55.0	55	91	130	31.5	31	92	52	12.6	13	94	4	1.0	1	92	462	111.9
2009	6	3.02	76	25.1	20	205	67.8	54	100	129	42.7	34	90	40	13.2	11	91	5	1.7	1	96	455	150.5
LAKE AVERAGE			16.7	19		46.3	49	94		34.9	37	94		12.1	13	96		1.4	2	99		111.5	
LAKE AVERAGE PRE-MLL			25.5	33		51.2	59	88		23.7	28	93		9.7	11	97		2.2	2	103		112.3	
LAKE AVERAGE POST-MLL			13.8	14		44.6	45	95		38.6	40	94		13.0	14	95		1.2	1	98		111.2	
LOWER 25th PCT. LAKE AVG.			11.8	12		34.1	44	91		28.3	33	92		10.6	11	94		0.8	1	96		93.8	
UPPER 75th PCT. LAKE AVG.			21.3	20		56.4	54	97		40.9	43	96		13.3	15	97		1.7	2	100		132.9	

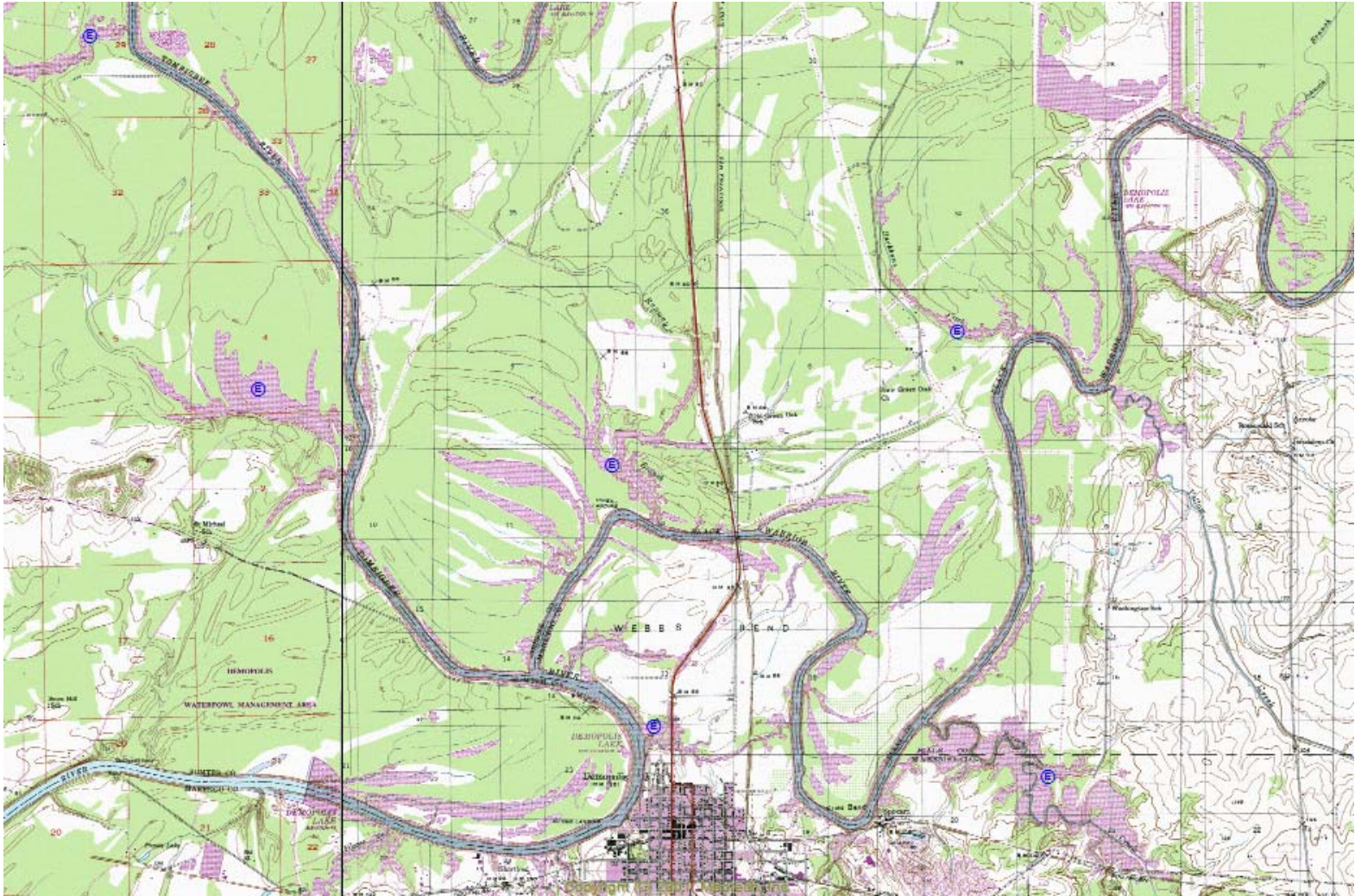


Figure 1. Spring 2009 electrofishing survey sites at Demopolis Reservoir.

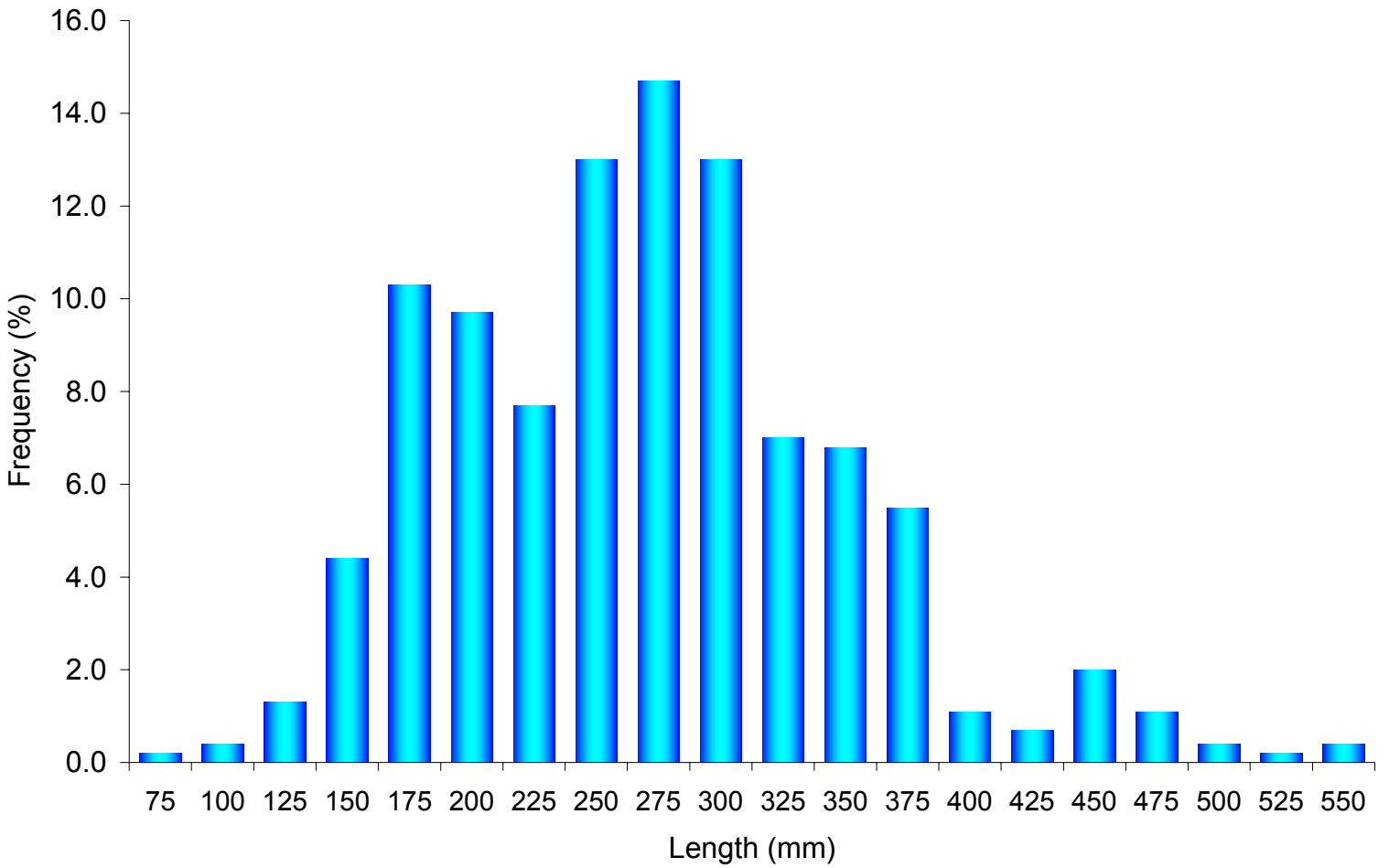


Figure 2. Length-frequency histogram of largemouth bass (N=455) at Demopolis Reservoir, April 2009.

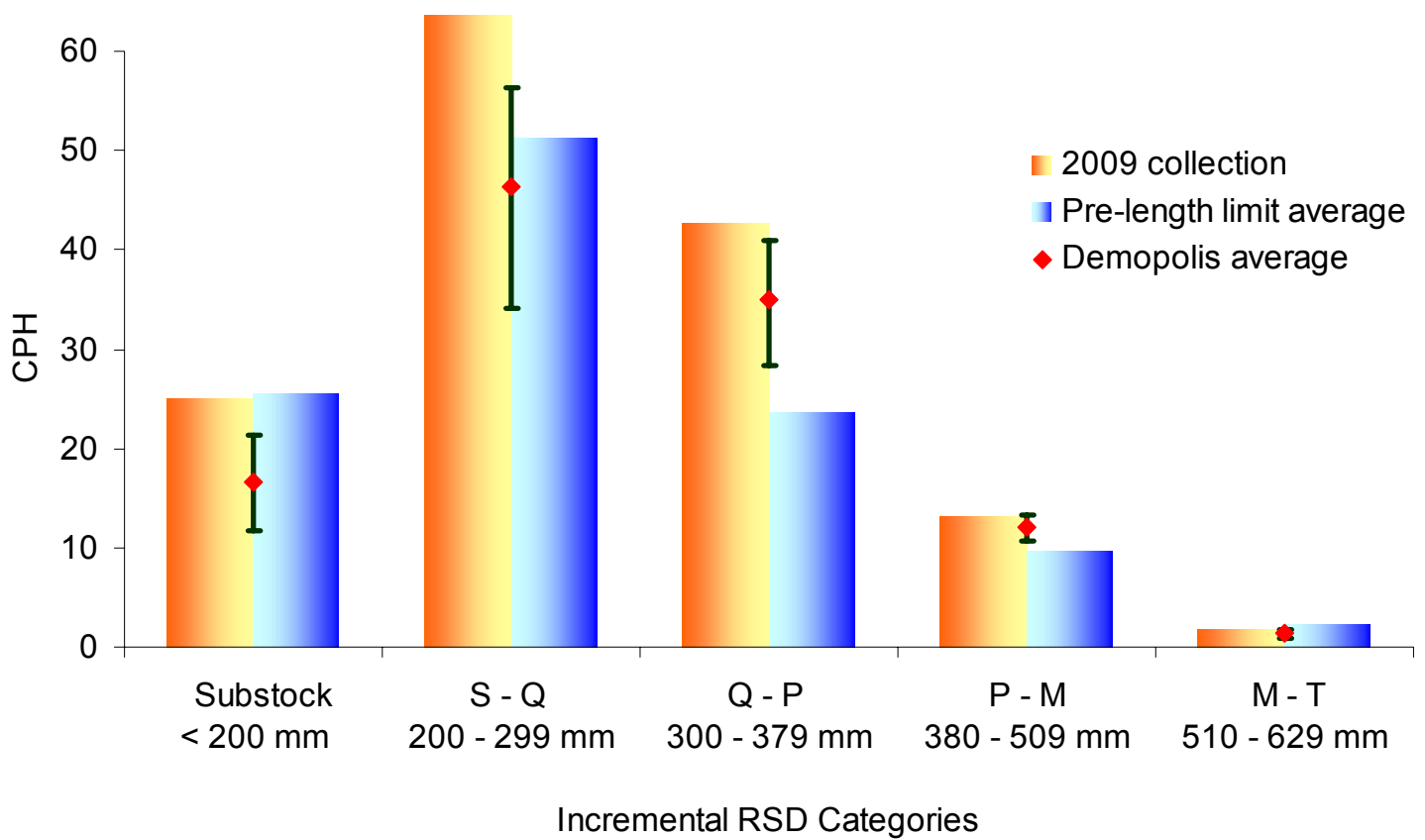


Figure 3. Catch per hour (CPH) of largemouth bass (N=455) at Demopolis Reservoir, April 2009, and the pre-length limit (N=4) and Demopolis average (N=16). Error bars represent the 25th and 75th percentile of CPH values, at Demopolis.

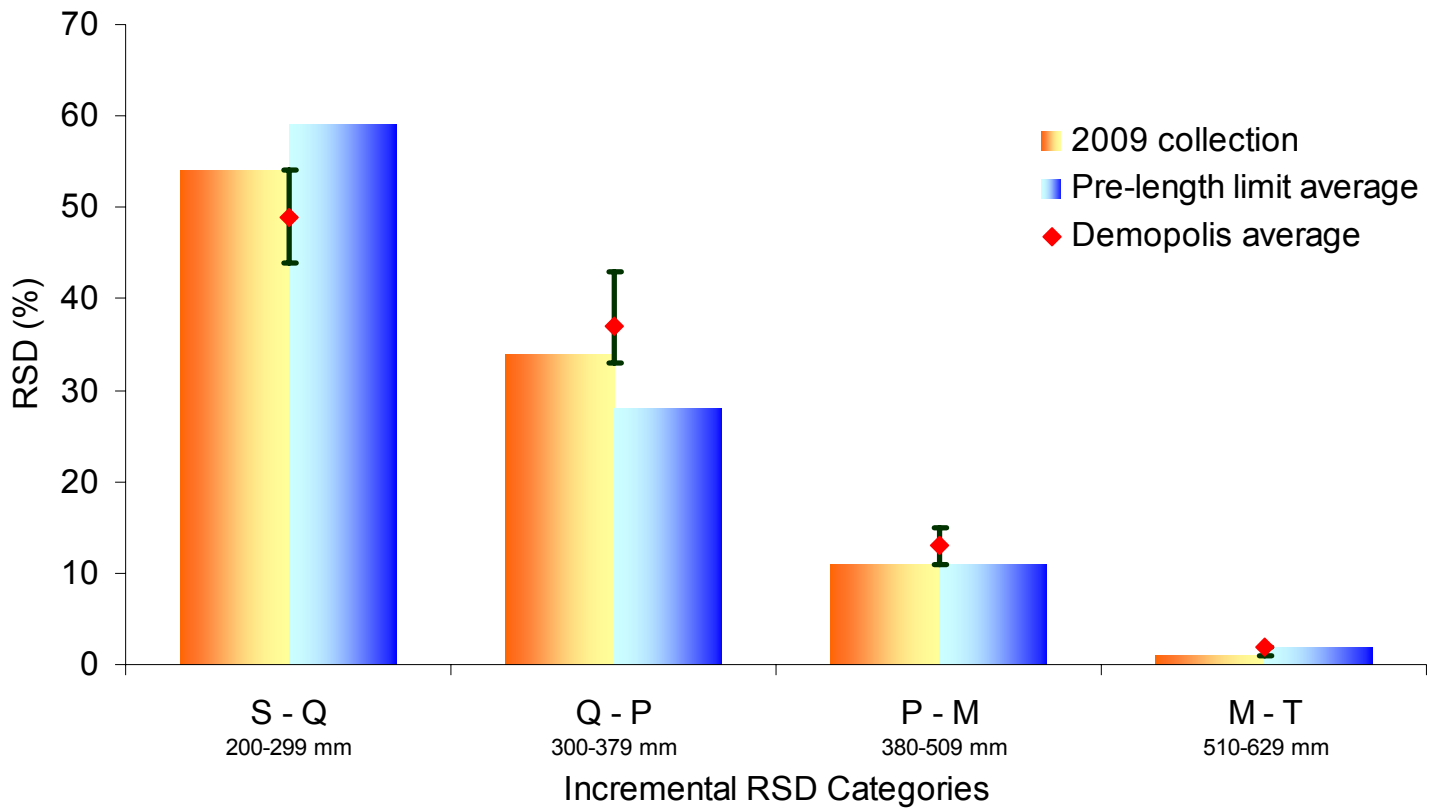


Figure 4. Relative stock density (RSD) of largemouth bass (N=455) at Demopolis Reservoir, April 2009, and the pre-length limit (N=4) and Demopolis average (N=16). Error bars represent the 25th and 75th percentile of RSD values, at Demopolis.

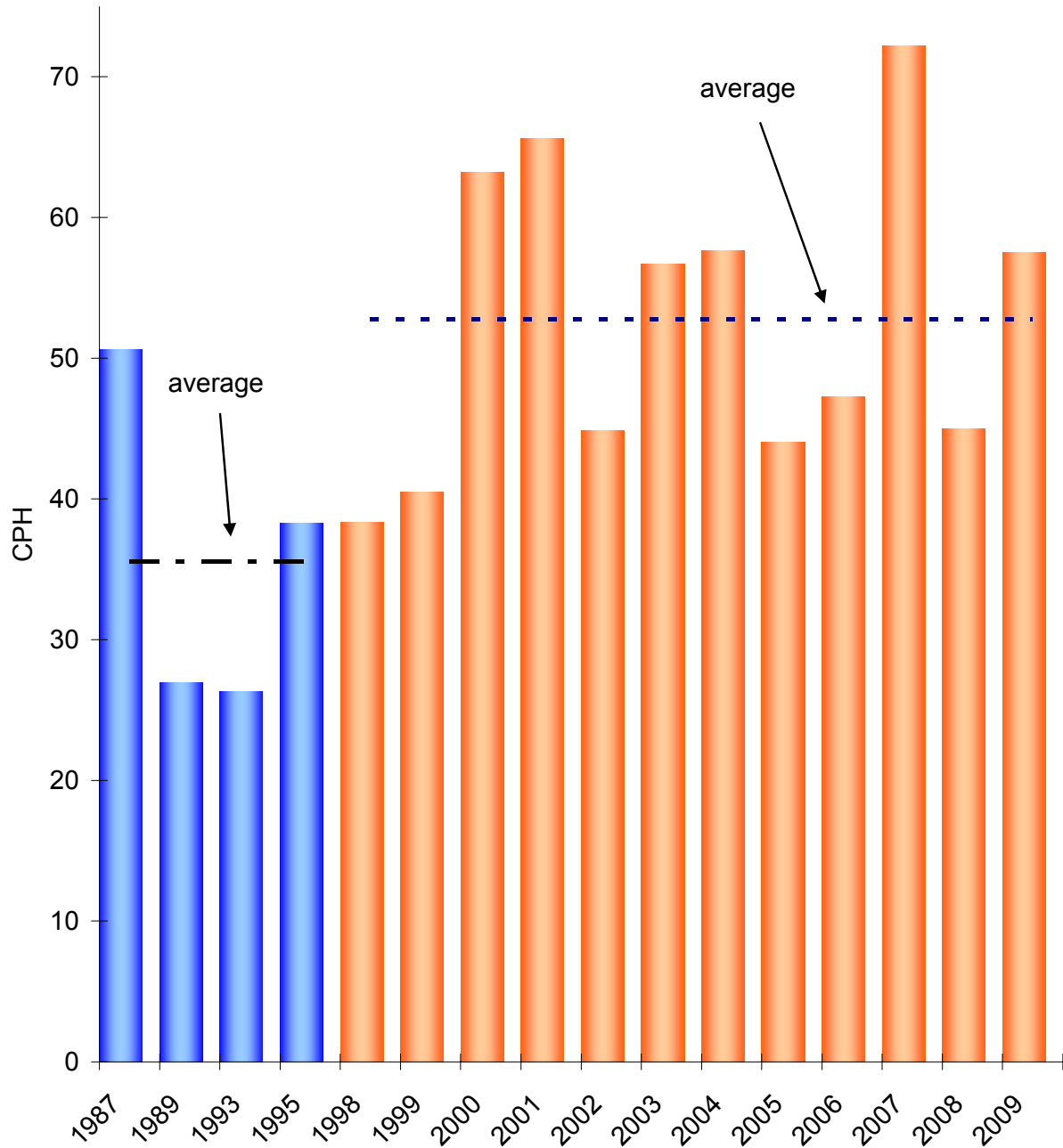


Figure 5. The catch per hour (CPH) of largemouth bass ≥ 300 mm at Demopolis Reservoir. The blue bars represent collections made prior to the implementation of the 14-inch minimum-length limit. The orange bars represent collections made since.

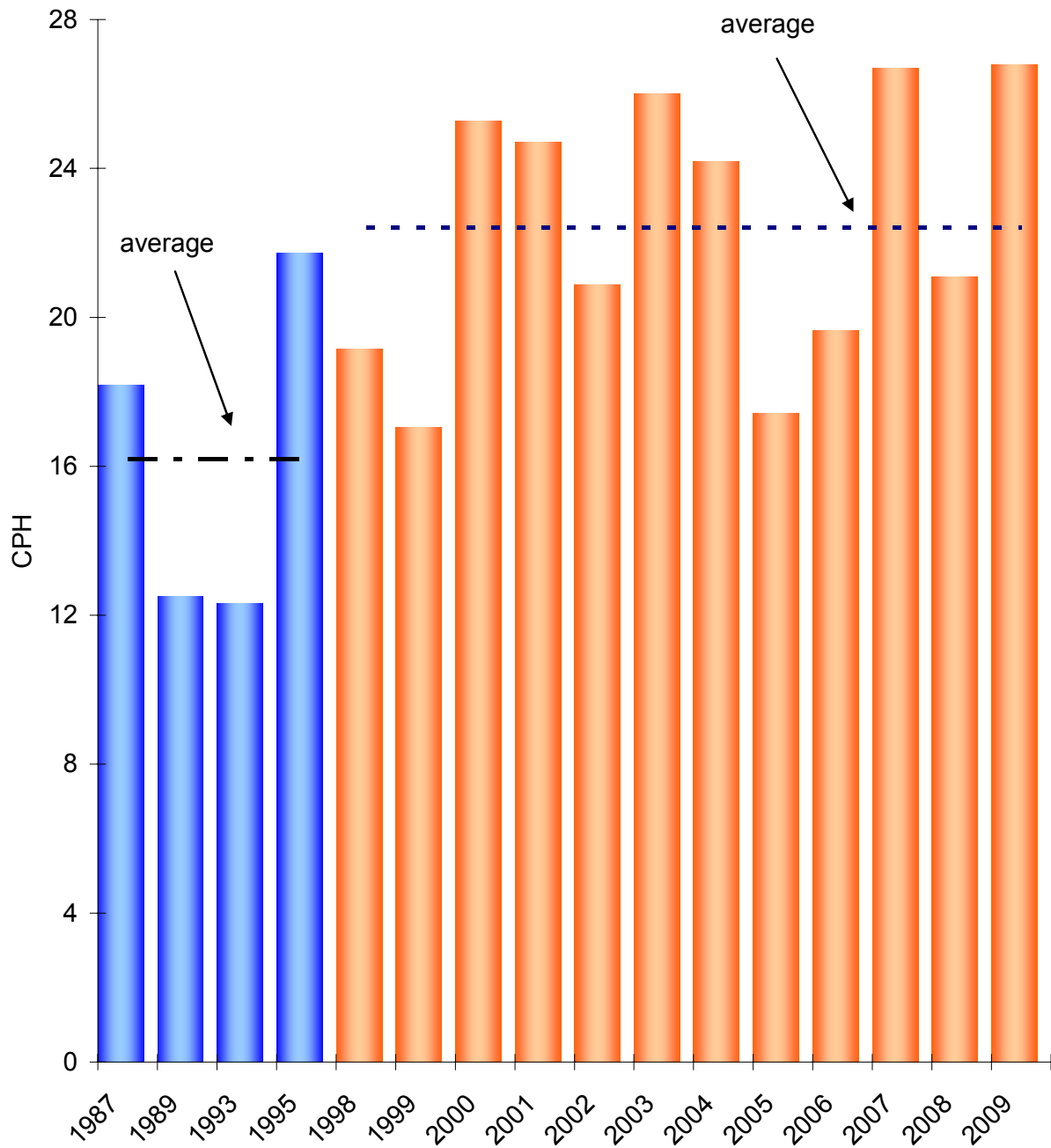


Figure 6. The catch per hour (CPH) of largemouth bass ≥ 356 mm at Demopolis Reservoir. The blue bars represent collections made prior to the implementation of the 14-inch minimum-length limit. The orange bars represent collections made since.

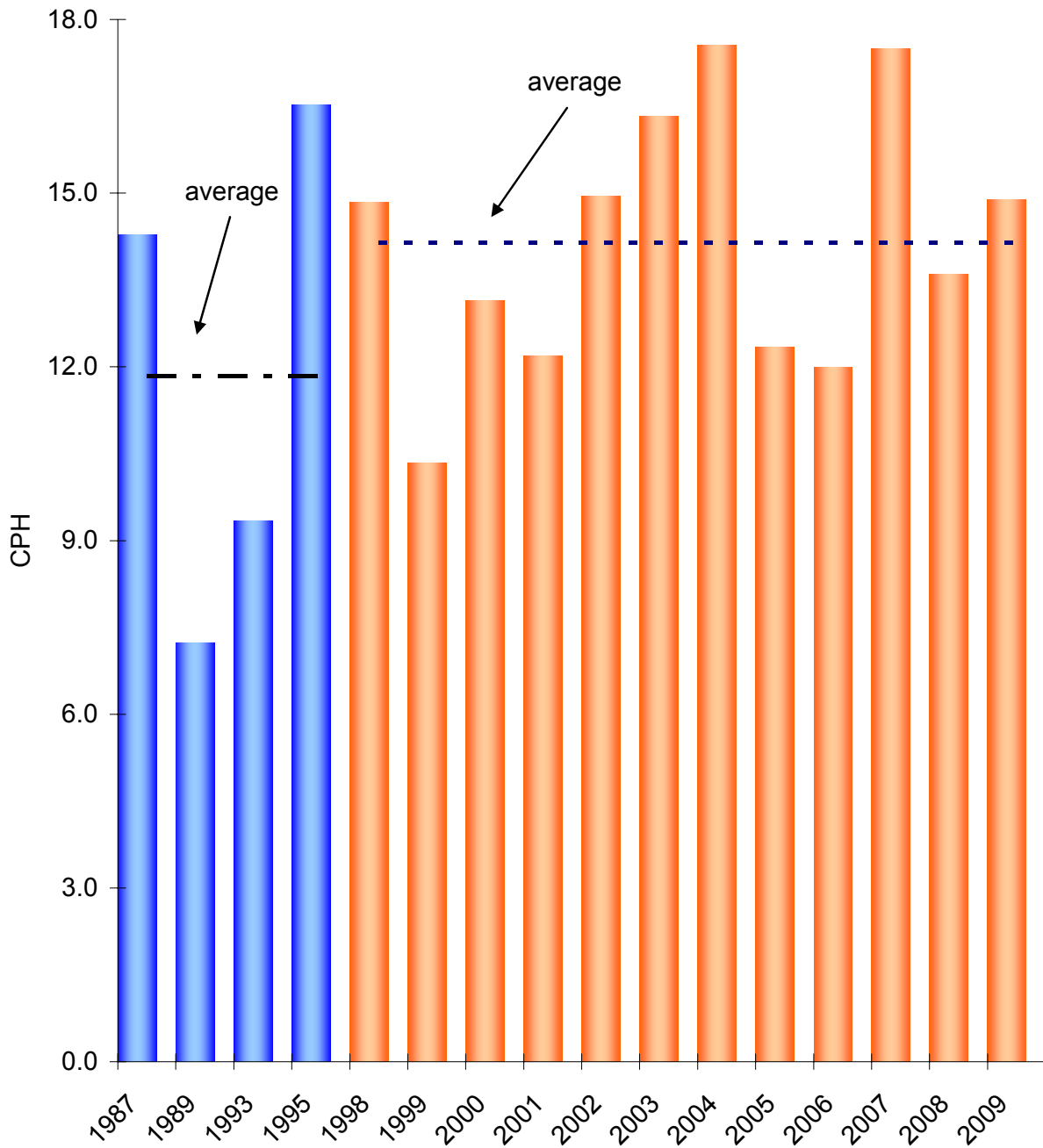


Figure 7. The catch per hour (CPH) of largemouth bass ≥ 380 mm at Demopolis Reservoir. The blue bars represent collections made prior to the implementation of the 14-inch minimum-length limit. The orange bars represent collections made since.

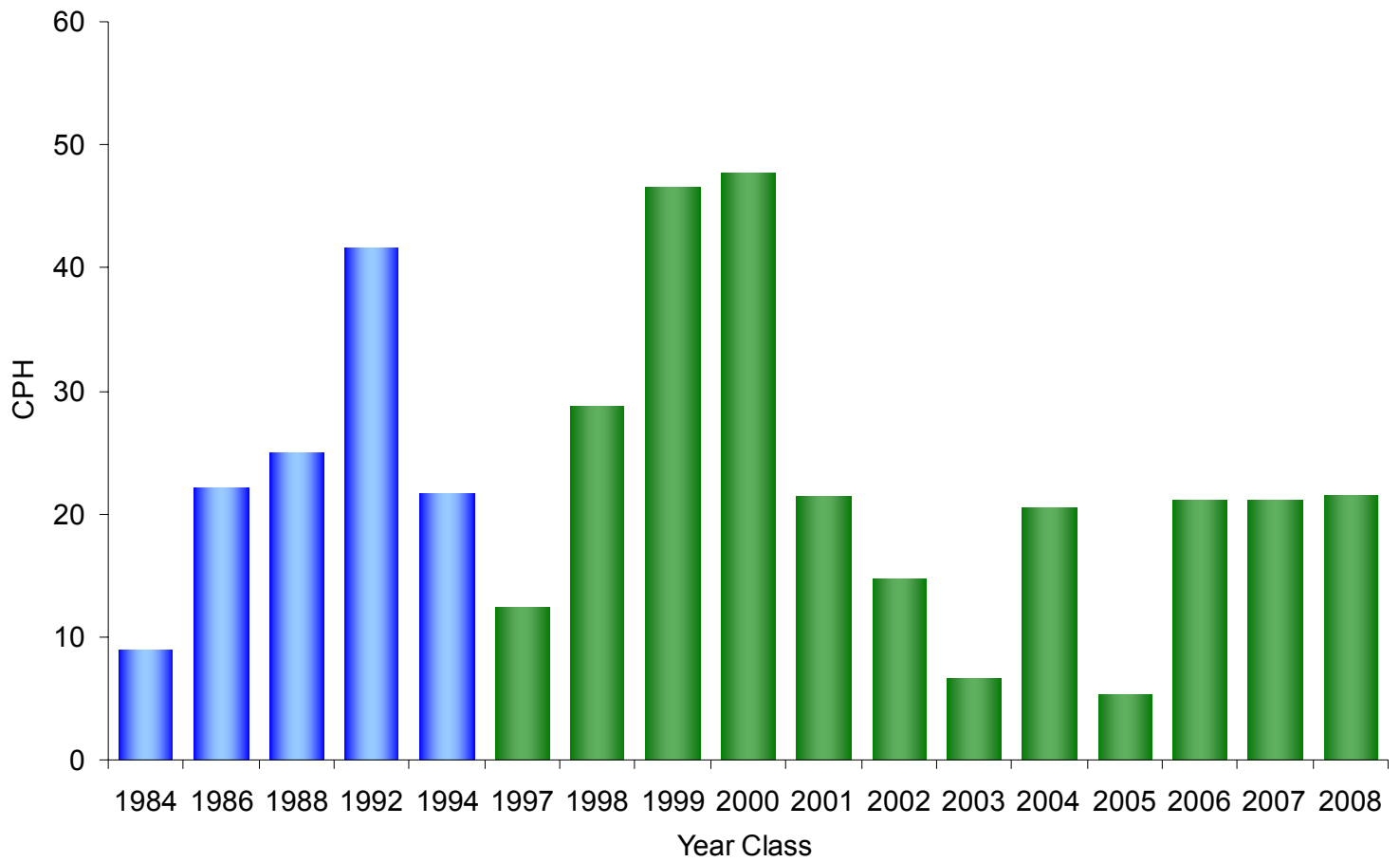


Figure 8. The catch per hour (CPH) of age-1 largemouth bass at Demopolis Reservoir. The blue bars represent year-classes established prior to the 14-inch minimum-length limit and the green bars represent post-size limit year-classes.

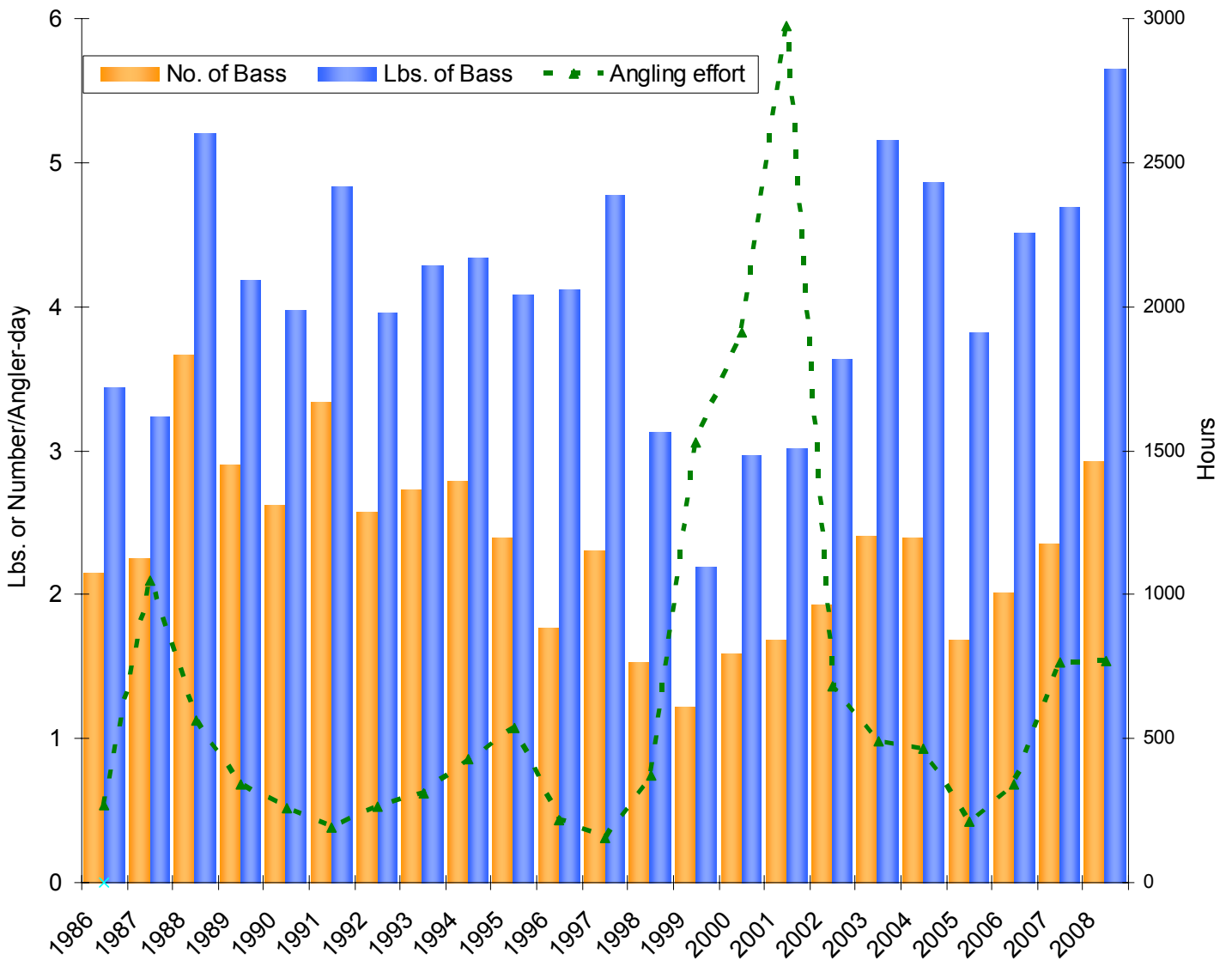


Figure 9. Number or pounds of bass weighed-in/angler-day at Demopolis Reservoir, 1986 - 2008, and the hours of fishing effort/bass \geq 5 lbs. weighed-in.