

GROWTH RATES OF THE WHITE CRAPPIE

Pomoxis annularis

IN THE TENNESSEE RIVER

by

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Introduction

The Tennessee River, tailwaters of Kentucky Dam, extends North from the dam at Gilbertsville, Kentucky, a distance of 22 miles and empties into the Ohio River at Paducah, Kentucky. The river averages approximately 1/4 mile in width, with depths up to 35 feet, and has a rapid rate of flow.

The fishery in the tailwaters is an important part of the over-all fishery at Kentucky Lake. Thus this study was undertaken to determine the present growth trends of white crappie in the tailwaters of Kentucky Dam. Also, similar research had been conducted on Kentucky Lake, and this paper might be of value as a comparison of the growth rates of crappie in these adjoining fisheries.

I Methods

Scale samples were collected during May through December, 1952, from fisherman's creels only. Since only larger specimens were present in these creels the smallest fish in the sample is 5.7 inches in length.

Each fish sampled was weighed and measured at the time scales were taken. Total lengths were determined in inches and tenths of inches, and weights were determined to the nearest 0.1 pound.

Scales were collected from a point under the pectoral fin on each specimen and mounted on glass slides. Scales were read on an Eberbach scale machine at a magnification of 40 diameters. The anterior scale radius was determined to the nearest 0.1 inch and length of fish at the end of each year of life was back-calculated by direct proportion.

All calculated lengths are based on the assumption that body-scale relationship is that of a straight line, and that if data for scale length and body lengths were plotted on a graph against each other, the intercept of the straight line would be at zero.

II Growth

Table I gives the average growth of each year class of white crappie sampled, plus the average calculated lengths of the entire sample. No attempt was made to differentiate between sexes.

Table I. Calculated Age and Rate of Growth in Inches of 237 White Crappie from the Tailwaters of Kentucky Lake

Item			Age Group				
Year Class	No.	Avg. Lgth. at Capture	I	II	III	IV	V
1951	88	7.2	3.3				
1950	89	9.6	3.7	6.8			
1949	44	11.2	3.4	6.3	9.2		
1948	13	12.2	2.6	5.0	7.8	10.4	
1947	3	13.5	2.2	5.2	7.7	10.2	11.9
Totals	237		3.4	6.5	8.8	10.4	11.9
Increment			3.4	3.1	2.3	1.6	1.5

Table II, Carter (1953), is included in this report so as to enable the reader to compare the growth of white crappie in the tailwaters with growth of this species in the lake.

It can readily be seen that white crappie in Kentucky Lake grow somewhat better than they do in the tailwaters. During the first year of life the lake fish grow approximately one inch longer than the fish of the tailwater and this advantage in early growth was held throughout life.

Table II. Calculated Age and Rate of Growth in Inches of 925 White Crappie from Kentucky Lake

Item			Age Group				
Year Class	No.	Avg. Lgth. at Capture	I	II	III	IV	V
1953	7	3.4					
1951	33	7.6	3.8				
1950	178	11.2	4.9	8.0			
1949	438	12.7	4.7	8.0	10.7		
1948	237	13.6	4.6	7.7	10.2	11.9	
1947	32	14.0	4.1	6.8	9.5	11.3	12.8
Totals	925		4.6	7.9	10.4	11.9	12.8
Increment			4.6	3.3	2.5	1.5	0.9

III Age-Frequency

Table III illustrates the age-frequency distribution for the white crappie included in the study. An examination of this table lends credence to the data presented in Table I and helps to confirm the laboratory analysis of the sample.

The discrepancy in lengths noted between the modes suggested in Table III and the actual lengths at annulus formation as given in Table I can be accounted for when it is known that most of the scales were collected during the months of September to December inclusive.

Table III. Age-Frequency Distribution For 237 White Crappie From the Tailwaters of Kentucky Lake

Item	Age Group						% of Total No.	
	Total Lgth. in Inches	0	I	II	III	IV		V
5.5 - 5.9			2					0.8
6.0 - 6.4			10					4.2
6.5 - 6.9			25					10.5
7.0 - 7.4			26					11.0
7.5 - 7.9			11	2				5.5
8.0 - 8.4			6	6				5.1
8.5 - 8.9			3	13				6.8
9.0 - 9.4			4	18				9.3
9.5 - 9.9			1	15	6			9.3
10.0 - 10.4			2	13	3			7.6
10.5 - 10.9				18	7			10.5
11.0 - 11.4				2	12	2		6.8
11.5 - 11.9				1	5	3		3.8
12.0 - 12.4					5	3		3.4
12.5 - 12.9					5	4	1	4.2
13.0 - 13.4								
13.5 - 13.9					1		1	0.8
14.0 - 14.4						1	1	0.8
Total		90	88	43	13	3		100.04
Percent		38.0	37.1	18.1	5.5	1.3		

Summary

A study of 237 scale samples of white crappie procured from fishermen's creels revealed that these fish had an average growth of 3.4 inches their first year of life, grew to 6.5 inches the second year, to 8.8 inches the third, to 10.4 inches the fourth, and to 11.9 inches the fifth year.

Comparing the growth of white crappie in Kentucky Lake tailwater and Kentucky Lake proper, it is noted that the lake fishes grew approximately one inch more the first year than the tailwater fish, and this advantage was retained throughout life.

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Literature cited

Carter, Ellis R. 1953. Growth Rates of the White Crappie, Pomoxis annularis, in Kentucky Lake. Ky. Dept. of Fish and Wildlife Res., Div. Fish., Fish. Bull. 12: 8 pp.

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