AGE AND RATE OF GROWTH OF THE YELLOW BULLHEAD IN REELFOOT LAKE, TENNESSEE[1]

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From 1937 to 1952 investigations were undertaken to determine the age and rate of growth of scale bearing game and rough fish. In 1953 this investigation was extended to the family Ameiuridae, fishes having skin without scales. The first of this family to be studied was the channel catfish, *Ictalurus lactustris punctatus,* (Schoffman, 1954). In this study of the the yellow bullhead, *Ameiurus natalis* (Le Sueur), the method of Sneed (1951) with modifications of Schoffman (1954) was used.

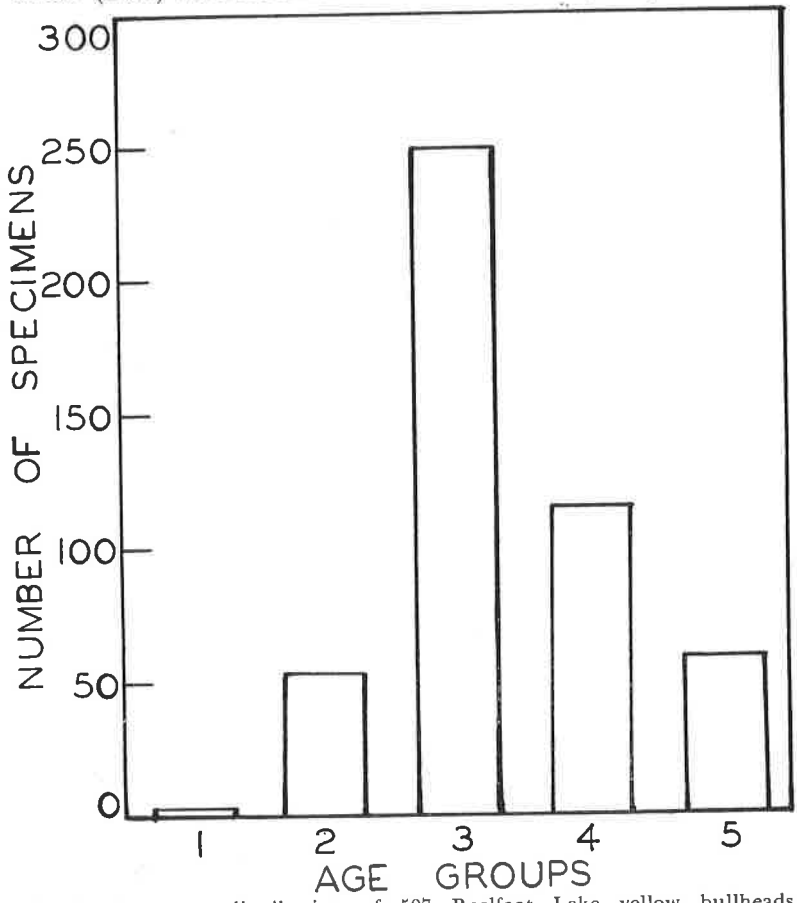

Fig. 1. Frequency distribution of 507 Reelfoot Lake yellow bullheads grouped into age-groups.

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The method of collecting and sectioning the spines described by Schoffman, 1954, was also used in this study. The histogram (Fig. 1) shows the distribution of 507 yellow bullheads arranged according to age groups, *i. e.*, a fish in age group 2 would show 2 annuli and be in its third year of life. Age groups 3 and 4 represent 75% of all specimens used in this study. Age group 3 represents 49% of all the specimens showing one half of the yellow bullheads caught are in the middle of this species life span.

The average rate of growth in length and weight of 507 yellow bullheads for each age group is shown in Table 1 and Fig. 2.

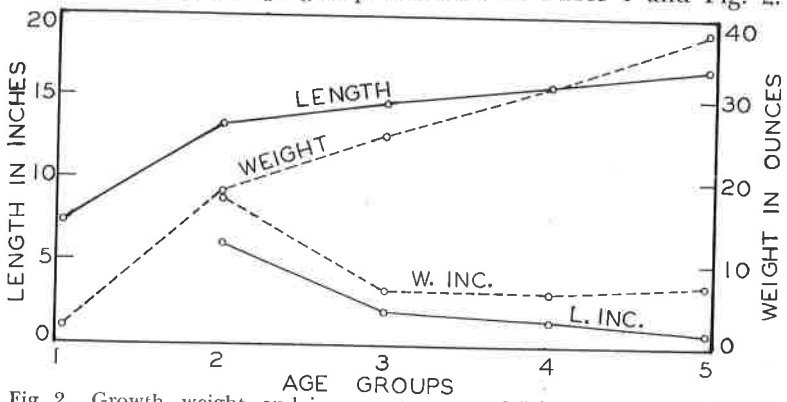

Fig. 2. Growth, weight, and increment curves of 507 Reelfoot Lake yellow bullheads. The increment curves represent the annual increase in length and weight.

TABLE 1. *Average total lengths and weights for each age group for 507 yellow bullheads from Reelfoot Lake*

Age Group	Number of Fish	Average Length	Average Weight
		inches	ounces
1	1	7.25	2.00
2	57	13.13	18.23
3	250	14.59	25.38
4	130	15.84	31.80
5	69	16.87	38.33

TABLE 2. *Size and age groups for 507 yellow bullheads from Reelfoot Lake*

Length Intervals	Number of Fish	Age Groups				
		1	2	3	4	5
7.1— 8.0	1	1	---	---	---	---
8.1— 9.0	0	---	---	---	---	---
9.1—10.0	0	---	---	---	---	---
10.1—11.0	2	---	2	---	---	---
11.1—12.0	8	---	8	---	---	---
12.1—13.0	34	---	18	15	1	---
13.1—14.0	84	---	21	60	3	---
14.1—15.0	124	---	7	104	13	---
15.1—16.0	148	---	1	65	73	9
16.1—17.0	78	---	---	6	36	36
17.1—18.0	27	---	---	---	4	23
18.1—19.0	1	---	---	---	---	1
TOTAL	507	1	57	250	130	69

If the length of age group 5 (16.87 inches) is taken as 100%, it may be stated that 78% of the total growth in length is completed by specimens of age group 2, 86% by age group 3, and 93% by age group 4. If the weight of age group 5 (38.33 ounces) is taken as 100%, it may be stated that the total weights acquired for the second to the fourth age groups inclusively are 47%, 66%, and 83%. Fig. 2 shows a progressive increase in length and weight for all 5 age groups.

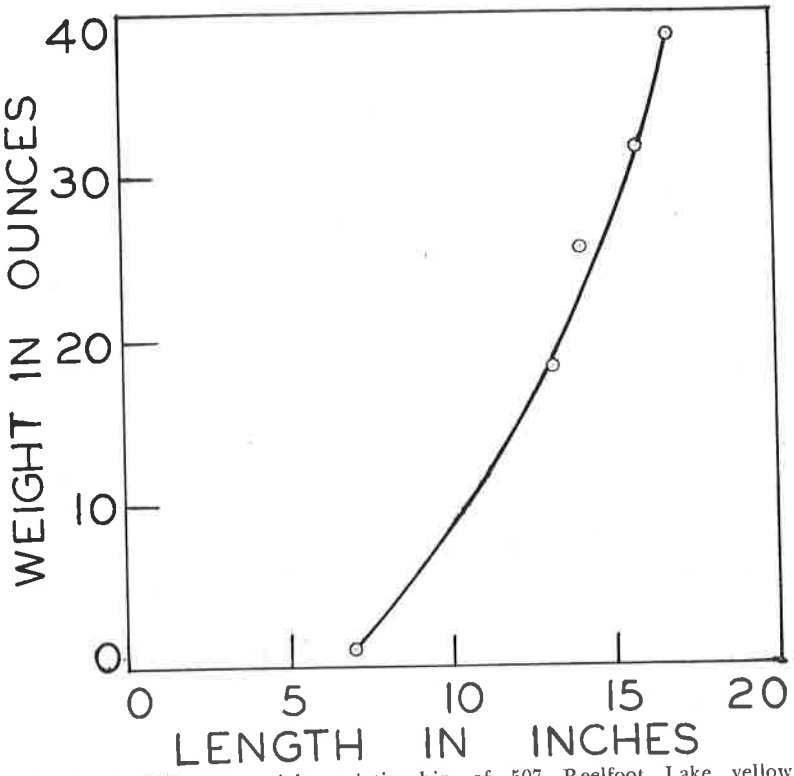

Fig. 3. Length and weight relationship of 507 Reelfoot Lake yellow bullheads.

The increment in length was greatest for age group 2. The increment decreases in each succeeding year. The weight increment was greatest for age group 2. The increment in weight from age group 2 through age group 5 shows an increase. However, this increase is slow but steady. The growth of yellow bullheads, though slow, continues at an even rate throughout its life. Table 1 and Fig. 3 show that no specimens were longer than 17 inches or heavier than 38 ounces. The oldest fish were in age group 5. No fish were over six years old and the increase in length and weight was slow after the second year of life. This

information indicates that the yellow bullhead's life history covers a period of six years which answers the question, "Why don't yellow bullheads ever exceed two feet in length and two pounds in weight?"

If the life history covers a period of six years, what becomes of the old specimens? The answer to this question is that specimens that reach this point die of old age. Fig. 1 shows that very few reach this age. Intensive commercial fishing is successfully harvesting the crop of yellow bullheads and only a small number of fish are left to die of old age. Fig. 1 also shows that 49% are caught at the end of their rapid growth.

Fig. 3, a graph of length and weight relationship, shows a rapid rise in weight and length from 7 inches and 18 ounces. From this point on, the weight increased rapidly over the length.

Table 2 shows the size groups and age for each size group. From 12.1 inches to 18 inches there is an overlapping of age groups. The range in length within the different age groups increases with an increase in age. Fish over 12 inches in length may belong to three or four age groups. The majority belong to two age groups. This overlapping occurred in fish aged by scale determination (Schoffman, 1954, 1948) and was found to occur in channel catfish by Appelget and Smith (1951), Sneed (1951), and Schoffman (1954).

Conclusions

Yellow bullheads in Reelfoot Lake have a slow but steady growth rate and are being harvested during their life history. There is no size or creel limit for yellow bullheads and unlimited commericial fishing is successfully harvesting the crop, leaving few to die of old age or other natural causes.

Acknowledgments

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