

*copy to: Pirnie*

INSTITUTE FOR FISHERIES RESEARCH  
UNIVERSITY MUSEUMS  
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Report 280

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AGE AND GROWTH OF THREE SPECIES OF GAME FISHES IN WINTERGREEN LAKE  
ON THE W. K. KELLOGG BIRD SANCTUARY, KALAMAZOO COUNTY, MICHIGAN .

The scale samples from game fishes taken from Wintergreen Lake have been recently submitted by Mr. Fred A. Westerman and Dr. M. D. Pirnie, to the Institute for Fisheries Research for age determinations. Of the three groups of samples received two have already been reported upon in letter form to Mr. Westerman (by Mr. Trautman on February 16, 1935, and by Mr. Eschmeyer on March 22, 1935). The third group of samples has now been studied and the results obtained from the study of all three submittals are considered in this report. The scale samples, which were received, represent a total of 20 bluegills, 8 common sunfish and 10 yellow perch.

In again presenting the data on the first group of samples (see February 16 letter), it is necessary to correct the method of age presentation which was used in this letter and which was somewhat misleading. The ages indicated in this letter refer to the number of annuli present on the scales. Since these fish were taken on February 9, there was no growth representing the 1935 growing season; consequently the 1934-1935 winter annulus had not been formed. Thus the actual age in completed growing seasons was, in each case, one year more than the indicated age. Therefore, in this report where age is given in terms of completed growing seasons, these specimens are considered to be one year older than indicated by the previous report.

In this report, the data on the specimens are not arranged according to the three groups of samples, rather the specimens are grouped according to species and year classes within the species. All of the data are given in the accompanying table; all weights are given in grams and ounces, and all lengths in millimeters

Table 1. Data on fish collected from Wintergreen Lake, Kalamazoo County, 1935.

| Species        | Sex               | Weight   |      | Length |      | Completed growing seasons | Date collected    | Collector              | In sample group <sup>1</sup> |
|----------------|-------------------|----------|------|--------|------|---------------------------|-------------------|------------------------|------------------------------|
|                |                   | in grams | oz.  | mm.    | in.  |                           |                   |                        |                              |
| Bluegill       | Female            | 125      | 4.4  | 192    | 7.6  | III                       | 2/25              | Payne                  | 3                            |
| "              | ....              | 150      | 5.3  | 178    | 7.0  | "                         | 2/22              | Pirnie                 | 3                            |
| "              | .....             | 110      | 3.9  | 184    | 7.2  | "                         | 2/25              | Payne                  | 3                            |
| "              | ....              | 170      | 6.0  | 195    | 7.7  | <u>IV</u>                 | 2/16              | W. and D. <sup>2</sup> | 2                            |
| "              | ....              | 284      | 10.0 | 215    | 8.5  | <u>V</u>                  | 2/16              | W. and D.              | 2                            |
| "              | ....              | 256      | 9.0  | 220    | 8.7  | "                         | 2/16              | W. and D.              | 2                            |
| "              | Male              | 300      | 10.6 | 240    | 9.4  | "                         | 3/1               | Payne                  | 3                            |
| "              | "                 | 335      | 11.8 | 247    | 9.7  | "                         | 2/25              | Payne                  | 3                            |
| "              | Female            | 325      | 11.4 | 248    | 9.8  | <u>VI</u>                 | 2/25              | Payne                  | 3                            |
| "              | ....              | 241      | 8.5  | 220    | 8.7  | <u>VII</u>                | 2/16              | W. and D.              | 2                            |
| "              | ....              | 298      | 10.5 | 230    | 9.1  | "                         | 2/16              | W. and D.              | 2                            |
| "              | ....              | 284      | 10.0 | 230    | 9.1  | "                         | 2/16              | W. and D.              | 2                            |
| "              | ....              | 312      | 11.0 | 235    | 9.3  | "                         | 2/16              | W. and D.              | 2                            |
| " <sup>3</sup> | ....              | 300      | 10.6 | 240    | 9.4  | "                         | 2/22              | Pirnie                 | 3                            |
| "              | ....              | 325      | 11.4 | 243    | 9.6  | "                         | 2/19              | Pirnie                 | 2                            |
| "              | Male              | 341      | 12.0 | 224    | 8.8  | "                         | 3/3               | Thorne                 | 3                            |
| " <sup>3</sup> | Male              | 350      | 12.3 | 255    | 10.0 | "                         | 2/25              | Payne                  | 3                            |
| "              | Female            | ...      | .... | 235    | 9.3  | "                         | 2/9               | W. and D.              | 1                            |
| "              | Female            | 345      | 12.1 | 255    | 10.0 | "                         | 2/24              | Rockwell               | 3                            |
| "              | ....              | 298      | 10.5 | 230    | 9.1  | <u>VIII</u>               | 2/16              | W. and D.              | 2                            |
| Common Sunfish | Male              | 170      | 6.0  | 187    | 7.4  | <u>III</u>                | 3/2               | Pirnie                 | 3                            |
| "              | Female            | ...      | .... | 170    | 6.7  | "                         | 3/2               | Pirnie                 | 3                            |
| "              | Male              | 250      | 8.8  | 204    | 8.0  | <u>IV</u>                 | 2/22              | Pirnie                 | 3                            |
| "              | Female            | 130      | 4.6  | 182    | 7.2  | "                         | .... <sup>4</sup> | Payne                  | 3                            |
| "              | Female            | 208      | 7.3  | 208    | 8.2  | <u>V</u>                  | 2/19              | Pirnie                 | 2                            |
| "              | Male              | 240      | 8.5  | 228    | 9.0  | <u>VI</u>                 | 3/1               | Pirnie                 | 3                            |
| "              | Male <sup>3</sup> | 325      | 11.4 | 240    | 9.4  | <u>VII</u>                | 2/22              | Pirnie                 | 3                            |
| "              | Female            | 245      | 8.6  | 210    | 8.3  | "                         | 3/2               | Pirnie                 | 3                            |
| Perch          | Male              | 170      | 6.0  | 230    | 9.1  | <u>III</u>                | 2/16              | W. and D.              | 2                            |
| "              | Female            | 114      | 4.0  | 200    | 7.9  | <u>IV</u>                 | 2/16              | W. and D.              | 2                            |
| "              | Male              | 227      | 8.0  | 250    | 9.8  | <u>VI</u>                 | 2/16              | W. and D.              | 2                            |
| "              | Male              | ...      | .... | 241    | 9.5  | <u>VII</u>                | 2/9               | W. and D.              | 1                            |
| "              | Male              | 213      | 7.5  | 245    | 9.6  | "                         | 2/16              | W. and D.              | 2                            |
| "              | Male              | 227      | 8.0  | 250    | 9.8  | "                         | 2/16              | W. and D.              | 2                            |
| "              | Male              | ...      | .... | 257    | 10.1 | "                         | 2/9               | W. and D.              | 1                            |
| "              | Female            | ...      | .... | 288    | 11.3 | "                         | 2/9               | W. and D.              | 1                            |
| "              | Female            | ...      | .... | 260    | 10.2 | <u>VIII</u>               | 2/9               | W. and D.              | 1                            |
| "              | Female            | ...      | .... | 267    | 10.5 | "                         | 2/9               | W. and D.              | 1                            |

- 1 Referring to the three groups of samples as received by the Institute.
- 2 Westerman and DeBoer.
- 3 This specimen, according to the collector, was possibly a bluegill x sunfish hybrid.
- 4 Presumably collected during February or March, date not given.

and inches.

Observations on the scales of the bluegills and sunfish revealed that the general trend in rate of growth of most of the individuals of the bluegills and sunfish was as follows: (1) the size attained by the end of the first year was small, especially among the bluegills; (2) during the second, third, and fourth years, the growth in length was very rapid; (3) the average growth in the third year was phenomenal; (4) during subsequent years the growth in length was again retarded.

A few of the bluegills and sunfish had a somewhat slower growth, which was more evenly distributed throughout the growing seasons. Since hybrid sunfishes grow much more rapidly than either parent species, it is quite possible that many of these more rapidly growing fish were hybrids, including the three specimens indicated by the collectors as possible hybrids.

The scales of the perch revealed that the rate of growth of this species was quite slow, but normally distributed throughout the different years of life, and with a tendency toward a gradual retarding of growth during the latter years.

Among the bluegills and perch the VII year class decidedly predominated in numbers of specimens. This may be explained by two possible causes: (1) the type of gear and the method of its employ may have been selective for a certain year class (directly through size), or (2) the VII-group may predominate within the lake, reflecting an unusually favorable spawning season during 1928. Data given in the table indicate that size selectivity of the gear does not explain the abundance of the VII-group in the samples, for (1) there are only three V-year-old bluegills within the size range of 220-247 millimeters, while there are eight VII-year-old bluegills within this same size range, and (2) the size range of the VII-year-class of both bluegills and perch considerably overlaps that of other age groups. Dominance of certain year classes in fish populations has often been noted. It cannot be definitely concluded, from the small amount of data thus far obtained, that the VII-group is a dominating one in Wintergreen Lake; however the data suggest that this condition might prevail. The situation is worthy of further investigations.

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