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REPORT NO. 845

FILLET WEIGHTS OF YELLOW PIKEPERCH Stizostedion v. vitreum

FROM SAGINAW BAY, NOVEMBER 12 - 16, 1942

by

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and

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During past years, the Division of Field Administration has encountered a problem in enforcing minimum size regulations established by law for the taking of yellow pikeperch (walleyed pike, yellow pickerel) for commercial purposes. The practice of filleting undersized fish of this species, in order to circumvent the law, is apparently growing, and a regulation to provide for a minimum size of yellow pikeperch fillets seems necessary. A regulation governing yellow perch fillets (Public Act 339, 1939) has practically eliminated the problem which formerly existed in the handling of undersized perch.

Saginaw Bay was chosen as the site for this investigation inasmuch as the principal production of yellow pikeperch in Michigan comes from this area. Fish were obtained from the Bay Port Fish Company and the R. L. Gillingham Fish Company at Bay Port, and from the Geo. Loeffler Fish Company at Sebawaing, through the very helpful efforts of Conservation Officer A. J. Neering. Thanks are due all those persons who cooperated in this investigation and permitted the use of their facilities.

The minimum size limit provided by law for yellow pikeperch taken commercially is $15\frac{1}{2}$ inches, total length. To provide a series of weights on either side of this minimum length, fish from 13 to 17 inches in total length were used. These fish were measured to the nearest quarter inch and each quarter-inch group was handled separately. The fish were weighed on a Chatillon spring balance to the nearest quarter ounce. Fred and Floyd Herman of Bay Port were engaged to do the filleting. These men, both of whom are commercial fishermen, have had considerable experience in dressing and filleting fish.

Table I shows, for each quarter-inch group, the numbers of fish used in the investigation, the minimum, average, and maximum weights in the round, the minimum, average, and maximum weights of the fillets, and the percentage loss due to filleting. Figure I shows graphically the distribution of the

fillet weights according to the total length of the fish. The small dots indicate the individual weights of the fillets of each quarter-inch group. The circles indicate the weighted average of the fillets for each group. The heavy broken line is an arbitrary curve (fitted by inspection) to indicate the general trend of the data.

According to the data thus compiled, the average fillet from a $15\frac{1}{2}$ -inch yellow pikeperch, with a round weight of 1 pound, 4.3 ounces, taken during November from Saginaw Bay, weighs 10.3 ounces. However, the weight of the fillet is closely related to the round weight of the fish. In the $15\frac{1}{2}$ -inch group, the round weights varied from 1 pound, $1\frac{1}{2}$ ounces to 1 pound, $7\frac{1}{2}$ ounces and the weights of the fillets varied from 8.2 ounces to 12.2 ounces. If the minimum weight limit for fillets from yellow pikeperch were set at 10.3 ounces, it is evident (Figure I) that 3 fish less than $15\frac{1}{2}$ inches in length provided fillets that weighed more than 10.3 ounces and that 19 fish having a total length of more than $15\frac{1}{2}$ inches provided fillets which weighed less than 10.3 ounces. Table II shows the number of undersized fish providing "legal-sized" fillets and the number of legal-sized fish providing undersized fillets at different fillet weights. These data indicate that a weight of 10.3 ounces (average for the $15\frac{1}{2}$ -inch group) is too high and that a more plausible weight is either 9.5 or 9.75 ounces.

The average loss due to filleting in the $15\frac{1}{2}$ -inch group of yellow pikeperch was 49.3 percent. This loss was probably somewhat less than that which occurs during the spring run when a certain percentage of the yellow pikeperch are in spawning condition. Most of the commercial fishermen who were interviewed during the investigation were of the opinion that the yellow pikeperch taken in the fall of 1942 were unusually heavy for their length.

The percentage of the total weight lost during filleting was only slightly greater in the undersized fish than in the legal-sized fish. For the 129 undersized fish used in this study, the loss through filleting was 49.8 percent, whereas in 110 legal-sized fish the loss was 49.6 percent. In November, therefore, slightly more than half (50.4 percent) the weight of legal-sized yellow pikeperch can be obtained as fillets.

There is relatively little literature concerning the loss of weight due to filleting of yellow pikeperch. Work done in 1888 by W. O. Atwater* on two yellow pikeperch showed a recovery of 41.2 percent of the round weight in filleting, a loss of 58.8 percent. This sample is, of course, inadequate as a basis for generalization. Ten years later, Langworthy** indicated that

*Atwater, W. O.

1892, The chemical Composition and Nutritive Values of Food Fishes and Aquatic Invertebrates. U. S. Commission of Fish and Fisheries, Commissioner's Report. 1888. pp. 679-868.

**Langworthy, C. F.

1898. Fish As Food. U.S.D.A. Farmer's Bulletin No. 85. Washington, D.C. pp. 7-30.

there was a loss of 47.1 percent of the round weight due to filleting in "pickerel". There is little doubt from his writing that he was referring to the yellow pikeperch. The figure of 47.1 percent loss in filleting is less than that of the present study. Langworthy made no mention of the number of fish on which his figure was based. In the typewritten annual report of The Red Lakes Fisheries Association (Minnesota) for 1938 there is a statement that fillet weight of "pike" is only 42 percent of the round weight. This figure means that there is a loss of 58 percent, 8.3 percent greater than found in the present study. However, nearly all of the Red Lakes pike are taken in the late spring and early summer, and the percentage loss applies to all legal-sized fish as a group. The GREAT LAKES FISHERMAN for April, 1937, contained the statement that there is a loss of about 60 percent in filleting in spring-run yellow pikeperch.

Upon questioning the commercial fishermen at Bay Port, it was learned that the percentage loss due to filleting of yellow pikeperch varied from about 60 percent on the spring-run fish to about 50 percent on fish from the fall catch. These differences were attributed to seasonal variations in the stage of development of the sex organs.

During the past five years, 84.5 percent of the total annual catch of yellow pikeperch from Saginaw Bay has been taken during the spring (April, May, and June), whereas only 9.5 percent has been taken during the fall (October and November). However, the spring catch has progressively decreased from 90.3 percent of the total annual catch in 1937 to 76.9 percent in 1941. The fall catch has progressively increased from 5.4 percent of the total annual catch in 1937 to 16.5 percent in 1941. The commercial fishermen at Bay Port said that the catch during the fall of 1942 was larger than it had been in many years.

Although the data in this report seem adequate for establishing a regulation for the minimum size of yellow pikeperch fillets for fish captured in the fall, the 10-ounce figure suggested would very likely be too high for spring-run fish. Inasmuch as about 85 percent of the total annual catch of yellow pikeperch is made during the months of April, May, and June, it is recommended that the establishment of any regulation be withheld until the spring run can be studied. An investigation similar to the present one should be undertaken in April, 1943, when yellow pikeperch are obtainable in large quantities.

INSTITUTE FOR FISHERIES RESEARCH

by Louis A. Krumholz and Ralph Hile

Report approved by: John Van Oosten (U. S. Fish and Wildlife Service) and
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Table I
 Round weights and fillet weights, in ounces and pounds,
 of yellow pikeperch arranged according to size and
 indicating the loss of weight due to filleting
 Saginaw Bay, November 12-16, 1942.

Total Length inches	Number of fish	Weight of fish in round			Weight of Fillet			% loss in filleting
		minimum	average	maximum	minimum	average	maximum	
13	2	11	12	13	4.8	5.7	6.7	52.5
13 1/4	5	10.5	11.8	13	5.6	6.2	7.1	47.5
13 1/2	6	12	13.9	1-1	6.3	6.8	7.7	51.4
13 3/4	7	12	13.7	15.5	6.6	7.1	7.7	48.2
14	11	11.5	13.4	1-0.8	5.3	7.0	8.3	47.8
14 1/4	17	13	15	1-1.3	6.2	7.4	8.5	50.7
14 1/2	22	12.5	15.5	1-2	6.4	7.8	8.8	49.7
14 3/4	21	14.8	1-0.9	1-3	7.7	8.6	9.7	49.1
15	19	15	1-1.6	1-4	6.5	8.6	9.6	51.1
15 1/4	19	1-1	1-2.8	1-8.5	8.3	9.3	11.7	50.5
LEGAL LENGTH FOR COMMERCIAL USES								
15 1/2	16	1-1.5	1-4.3	1-7.5	8.2	10.3	12.2	49.3
15 3/4	20	1-3.8	1-5.7	1-8	9.6	10.8	12.2	50.2
16	17	1-3	1-6.5	1-8.3	9.4	11.5	13.6	48.9
16 1/4	17	1-3	1-7.0	1-10.8	8.9	11.4	13.0	50.4
16 1/2	18	1-5	1-8.8	1-11.5	10.7	12.7	14.1	48.8
16 3/4	11	1-8	1-9.9	1-12	12.2	13.1	14.3	49.4
17	11	1-9.3	1-10.5	1-11.7	12.1	13.2	14.1	50.2
Total	239	Average Percent loss						49.7

Table II

Numbers of undersized fish providing legal-sized fillets and numbers of legal-sized fish providing undersized fillets, at various fillet weights, yellow pikeperch, Saginaw Bay, November 12-16, 1942

Undersized fish producing legal-sized fillets

Legal-sized fish producing undersized fillets

Fillet wt.

9.5 oz.	10
9.75 oz.	4
10.0 oz.	3
10.3 oz.	3

6
10
14
19

FIGURE I

