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A PLAN FOR PROMOTING THE WHITEFISH PRODUCTION  
OF THE GREAT LAKES



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# A PLAN FOR PROMOTING THE WHITEFISH PRODUCTION OF THE GREAT LAKES.

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In preparing the following discussion I considered it desirable to eliminate as far as possible the complicated and tiresome statistical details which, in almost every paper of this nature, go to make up a great portion of its subject-matter. I believe that the interest of those who may be called upon later on to devise some effective means of increasing the supply of this greatest of all American food fishes will be more easily aroused by demonstrating a simple and practicable solution of the problem. Some figures are necessary, of course, but in most instances I have made bold assertions of facts which I know to be true, and which I am going to take the liberty of asking my audience to accept for the truth.

## CONDITIONS OF THE FISHERY AND THEIR CAUSES.

It is a universally conceded fact that in an early day when the forests of the states and provinces bordering upon the Great Lakes were for the most part still in their primitive splendor, when the rivers and streams emptying into these waters ran clear as crystal and when civilized man had not yet turned so extensively to the waters for his livelihood, whitefish were in very great abundance and were distributed in a wide range throughout the entire water system known as the Great Lakes. Even as late as from 1864 to 1870, as may be noted by reference to Mr. J. W. Milner's report in the Bulletin of the United States Fish Commission for the year 1872, whitefish were present in such large numbers that during a single season it was not unusual for a fishing ground to yield from 200 to 700 half barrels for each pound net in operation. In a long and very interesting conversation which I had a few years ago with a Mr. Woodward, who was then a very old man, I learned that sometime during the early fifties, while he was acting as a government surveyor and maintaining a camp at the mouth of the Thunder Bay River, his party caught more whitefish than it could use and took them all from the river itself. At the present time no whitefish

are caught within 9 miles of the river's mouth. In 1867 and 1868 my father, the late N. W. Clark, who was one of the pioneer fish culturists of America, took whitefish spawn on the Detroit River, and his observations made at that time indicate that the species was very abundant. At Grassy Island and Mama Juda, two of the best-known fishing grounds, 1,000 fish at a haul was no unusual occurrence. At the present time a haul of 30 fish is considered large. The same is true also of the Au Sable region upon Lake Huron, where during the sixties from 40 to 50 boats were doing a very lucrative business and at the present time not more than a half dozen are operated with only indifferent success. In varying degrees this same decrease in numbers has taken place upon every fishing ground of the Great Lakes, in a great many places to such an extent that operations have been entirely abandoned.

Why should this be so? If we can answer this question, and if the causes can be eliminated or in some measure restricted and controlled, we will have found a solution of our problem in so far as a solution is possible.

First. The cutting of our forests and consequent floods and erosion of the soil, the discharge of sawdust and other refuse from the lumber and pulp mills, chemical works, and sugar factories, which go to make up the industrial life of the cities situated on the Great Lakes, have made the deposits from the mouths of our rivers offensive to the dainty senses of the whitefish and have gradually encroached upon its spawning and feeding grounds to such an extent that in thousands and thousands of acres which at one time were teeming with this species it is now an absolute stranger. This damage can not now be undone, but by wise legislation the cause of it may be to some extent prevented from further offenses.

Second. The operation of the commercial fisheries under unwise laws and the nonenforcement of good laws has, in my judgment, contributed in a greater degree toward the decrease of the whitefish than all of the other causes put together. Most of the law-making bodies of the states bordering upon the Great Lakes have put the cart before the horse, so to speak. By their enactments they have permitted the taking of this fish at all times except during the spawning season and the period of incubation, which all students of fish culture insist is a kind of alleged protective legislation that does not protect. If we are to have closed-season laws they should cover the month or months when the largest lifts of unripe fish are made. It is then that our whitefish need protection, for their ova are immature and we can not half so well spare the parents as we can during the spawning season. When unripe adults are caught for market all their spawn is necessarily wasted, whereas if protected until the spawning season the different commissions would be given an opportunity to save the ova, hatch the fish, plant them in the lakes, and thus by artificial propagation cause each ripe female to furnish thousands of her kind. We have

hatcheries to care for the ova, and, if the present number is insufficient, let us build and equip others; in any event let us not expect nature to make a complete revision of her fundamental laws merely to accommodate herself to the lack of foresight and the inconsistency of mankind.

We need no protection for mature fish, except, as above stated, during the months when the largest lifts of unripe fish are made. The young fish should be protected against the adults. These are the enemies and food competitors of the growing generations, and the quantity of food that a dozen adults consume will suffice for the support of thousands of fry. The question may properly be asked, do the fry subsist upon the same individual food that the adults require? Strictly speaking, they do not; but the source from which the growing generations derive their food supply is at least indirectly dependent upon the higher groups which the adults do destroy.

For these reasons, therefore, I contend that the so-called closed-season laws as they now exist are all wrong. Of course, I am not one of those enthusiasts who believe that our lakes may be made to teem once again with the countless millions of the early days, even with the assistance of the wisest possible legislation and most successful artificial propagation. The conditions have been changed and I know of no way whereby they can be restored. The formerly vast and almost unlimited areas of spawning and feeding grounds have been gradually destroyed by sawdust, bark, slabs, water-logged timber and other refuse, and the water for miles out from shore in the neighborhood of cities and towns is constantly being polluted and infected by poisonous sewage and other impurities. Because of these unfortunate conditions the present spawning and feeding grounds are confined to a few localities.

#### REMEDIAL MEASURES.

But that the whitefish of the Great Lakes can be increased very materially in spite of these difficulties which the fish culturist is forced to encounter I am very strongly convinced. This can be done only by closely adhering to some such plan of action as I shall outline in the remainder of this paper, and which I contend, and shall endeavor to convince my hearers is the only possible solution of the problem.

##### (1) INTERNATIONAL PROTECTIVE LEGISLATION.

First, there must be concerted action, by means of a treaty or otherwise, on the part of the United States Government and the Dominion of Canada, and such action must be carried on to the point where there shall be one set of laws applicable to all the waters of the Great Lakes and their tributaries, and enforceable on the part of either government in any part of its own or

the other's territory. I would also repeal and abolish all of the existing laws of the several states and provinces in so far as they deal with the food fishes of the Great Lakes, so that the question of proper authority and jurisdiction could never arise. The greatest advantages to be gained by thus placing the Great Lakes under the control of the two governments would be the more rigid enforcement of the laws and the removal of legal proceeding from the universally conceded local influence over local juries. A uniform law such as I deem to be adequate to afford the fullest measure of protection for the whitefish should be framed along the following lines:

(1) Issue to the present United States and Canadian fishermen, or to anyone who shall subsequently apply therefor, a revocable license to fish the waters of the Great Lakes and their tributaries; such license to be suspended for six months for the first violation, one year for the second, and forever forfeited without hope of reinstatement upon a third violation of the protective laws.

(2) Provide for an open season during the months when the fish are spawning and a closed season during the month or months when the largest lifts of unripe fish are made.

(3) Prevent any sort of fishing in certain localities where large numbers of immature fish congregate upon the feeding grounds, this legislation to pertain to all portions of the Great Lakes system where the presence of such fish has been established and to be enforced during such month or months as they make their appearance in large numbers for feeding purposes.

(4) Prevent the sale or offering for sale or the use of immature whitefish in any manner except for charitable purposes, the size of a mature fish to be legally fixed for this purpose at  $2\frac{1}{2}$  pounds. This would discourage the capture of immature fish and protect them upon their feeding grounds, where they assemble in schools.

(5) Make no restrictions of any kind whatsoever as to the kind of nets or the size of the mesh which the fishermen may use in their operations, because, in my judgment, the provisions of this character which are now a part of the present local laws have furnished even more opportunities for the fishermen to escape conviction than the influence upon local juries. Rigidly enforce the provisions regulating the size of the fish which may be sold, and the size of the mesh, kind of net, and manner of capture will be regulated by the fishermen themselves.

(6) As a part of this legislation let there be a provision requiring all fishermen who operate in the territory comprising the Great Lakes and their tributaries to take and fertilize all of the spawn contained in every ripe female that is caught during the spawning season, further details of which plan I shall discuss under another topic.

The above-outlined six provisions would, in my judgment, constitute an adequate law for the greatest protection and consequent increase of the whitefish that it would be possible to give them. If a uniform law can be agreed upon and framed along these lines, and then enforced with the same watchful diligence with which the revenue laws of both countries are enforced to-day, there is no room for argument against the statement that, aided by artificial propagation on a large scale, the whitefish may be increased so materially that at no very distant future date the fisherman's net will be found to contain dozens where there is one to-day.

## (2) ARTIFICIAL PROPAGATION.

Now while a uniform, adequate, and rigidly enforced set of laws is of the greatest necessity in bringing about a material increase in the whitefish, propagation upon a large scale is absolutely indispensable. That artificial propagation of the whitefish as it has been worked out and practiced during the past twenty years by the several states and the United States and Canadian governments has been the means of effecting an actual increase of this species, there is at this day no one so bold that he dare dispute. Statistics have been prepared and published which show that until within the past six or seven years from two-thirds to three-quarters of all plants of whitefish fry have been in Lake Erie and the Detroit River, and the fact is well known that in these waters there has been a large increase in their numbers. The United States Government during its operations at Belle Isle and Grassy Island in the Detroit River for the past few seasons has taken from 25 to 50 per cent more whitefish at these points than the Michigan Fish Commission did a decade ago, the fishing continuing for no longer a period each season and being with the same kind and length of seines.

Now, by artificial propagation on a large scale I mean the production of whitefish fry in such numbers that every suitable locality on the Great Lakes may have the same, or, if possible, greater opportunities to assist in this increase than have been afforded Lake Erie and the Detroit River. This would involve the planting of from two to five billion fry annually, and the following plan, if adopted, would easily furnish, in my judgment, a sufficient number to bring about the required results:

Every fisherman operating in the waters of the Great Lakes should be required to strip every ripe female caught during the spawning season and impregnate the eggs taken therefrom. This would operate as an annual tax upon the fishermen, the expense being probably from \$25 to \$100 per boat. At the present time from 50 to 75 per cent of the fishermen are perfectly familiar with the methods employed in successful spawntaking, and there

would be very little difficulty in having the inexperienced taught by the experts in the employ of the two governments. After impregnation all of the spawn should be turned over to United States and Canadian government agents for shipment to the several hatcheries, where the eggs could be cared for and the fry distributed in a wide range throughout the entire Great Lakes system. The eggs taken by each fisherman should be measured and kept separate from the others throughout the incubation period. This would involve but very little additional labor and would be of very material assistance to those agents of the two governments upon whom would be placed the responsibility of enforcing the protective laws; and such a record would not only show exactly which fishermen were improperly impregnating the eggs taken, but by comparison with the size of their catch during the spawning season it could be satisfactorily determined whether or not they obeyed the law prescribing that all ripe females should be stripped. Of course, a fisherman might be the victim of ill luck throughout one season, but a recurrence of an unsatisfactory showing would put him under suspicion, and with the penalty of a forfeiture of his license hanging over his head he could be very easily made to see the error of his way. Finally, the Detroit River must be closed to all fishing at all times, except with rod and line, and must be constituted a joint government reservation, controlled and used by the two governments for collecting stations.

If the present facilities for handling the product from these two sources are not sufficient, hatching and distributing stations can be arranged for easily and without any great amount of expense. Such a station with a producing capacity of 50,000,000 fry can be constructed and equipped at a cost not exceeding \$1,500, and the same can be operated at an annual expenditure of \$500.

This is my plan, in the rough to be sure, but with its essential outlines sufficiently distinct to make the work of preparing and putting into execution an adequate system for the proper protection and consequent increase of the whitefish in the Great Lakes a comparatively easy task. It is self-evident that, inasmuch as the life and growth of the whitefish industry of our inland seas are directly dependent upon the maintenance of supply, the plan which will best promote the industry will be the one which will insure the greatest increase in the species.