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Mr. Ruhl

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REPORT NO. 398

SUBJECT: HOW RESEARCH HELPS TO
MAINTAIN SPORT FISHING IN MICHIGAN

Introducer

During recent years Michigan has come to consider the business growing out of "Recreation", as among its most important industries; and to rate its inland or "sport" fishing as a major factor in making Michigan a good place to live or in which to spend a vacation.

Feeling that way about it, the Conservation Commission has considered that such an important source of business is entitled to the best of modern servicing, and therefore maintains what it calls its "Institute for Fisheries Research," of which Dr. A. S. Hazzard is in charge. He will now tell us something of what this Institute has been doing for the fish and fishing of Michigan..... Dr. Hazzard.

Dr. Hazzard

In Michigan it is generally agreed that if we added up all the money spent or invested in connection with our outdoor recreation, the total would run into larger figures than would any of our industries except manufacturing.

That total has been estimated at several hundred million dollars a year, but whatever the figures, they will certainly be very large. For instance, our deer-hunting season has just closed with something like

100,000 licenses outstanding. If we allow, say, one day on the road, going and coming, and 3 days in the woods, and if the average hunter spends only \$5 per day, we have something over \$2,000,000 put in circulation as a result of the deer season.

The similar business coming from the pheasant and grouse season, and from "resort" and "winter sports" activities are likewise very large and growing larger; but we rate the total of the turn-over principally dependent upon fishing as the greatest item of them all.

This being the case, our deer, trout, pheasants, bass, grouse, pike, rabbits, bluegills, muskrats, beaver and so on, are now wanted in large quantities, and dependably from the same lands and waters, year after year. To us in Michigan, that seems to put these wildlife species into the category of crops--crops having a cash value of many millions of dollars a year. So we are now trying to "service" these wildlife "crops" in the most modern way--by learning the habits and requirements of our various species of fish and game, under what conditions they thrive best and how to make the poorer lands and waters more productive. Farm and forest crops have been serviced in this way for generations by specialists working at our many agricultural and forest experiment stations.

The Institute for Fisheries Research is, in effect, a laboratory and experiment station of just that sort, maintained for the benefit of Michigan anglers. We are a part of the Fish Division of the Conservation Department, but our headquarters are at Ann Arbor where the University furnishes us laboratory and office facilities.

What do we do? How do we "service" fish and fishing?

Well, we take hold wherever there seems to be difficulty or trouble for which nobody has a satisfactory answer. In a way, we are "trouble shooters" but all the time it is our principal business to find out, if we can, the "why" of fish affairs.

Every little while something like this comes up. Word reaches a Conservation Officer that fish are dying under the ice at Mud Lake. The officer phones his report to Lansing and they phone us--Will we get someone over to Mud Lake right away to check up on the situation?

We can guess what this is going to be so we pack a field-going chemical kit, some jars and formalin to pickle specimens and are off in our truck. Sure enough, Mud Lake proves to be shallow with marshy shores, soft mucky bottom and with neither inlet nor outlet. The ice is better than twenty inches thick and covered with a heavy blanket of snow so that almost no light can get down to the green water plants which would otherwise help to keep up the oxygen supply.

When we look in through the newly cut holes, dead and dying fish are to be seen in every one of them--fine big bluegills, perch, bass and minnows. Our chemical tests show there is no oxygen in the water near the bottom and less than one part per million parts of water at the surface. Later in the laboratory when we go through the preserved specimens we find no disease or parasites which would account for the trouble. Plainly a case of suffocation due to depletion of the normal oxygen supply of the water. Fortunately such lakes are not numerous--probably 1% of the total in Michigan--but these lakes are mostly in thickly populated districts and the fishing in them is important.

So we go to work on the problem--experimenting. The proposition is to get some oxygen into that dead water and to get it in fast--and cheaply enough. The nearest fish hatchery loans us a gas-engine pump and with the help of sportsmen and government relief workers we get it out on the ice and soon have a two inch stream of water spraying into the air, falling to the ice and running over the surface, absorbing oxygen as it goes, until part of it drains into the ring of holes which we have cut a few rods from the pump and so that some of the freshly aerated water can reach the dying fish. And yes, without doubt, the fish which are near the holes are

now feeling better but they represent a pitifully small fraction of all the fish in Mud Lake--and its a cold wet job and costing too much for the value of the fish we can hope to save. The method is too crude and too expensive--but we're started. We feel sure that if we can only find it, there will be some practicable and worthwhile way to lessen or stop these bad winter-kills in our shallow lakes.

No, we haven't found it yet. Before we got very far last winter the weather changed, a thaw brought in snow water rich in oxygen and the trouble was over for that season. If it comes again this winter, we'll be all ready to try out some other schemes. Meanwhile we've been searching the fish literature and writing to other states where they have similar trouble to learn what has been tried and if they have found any practicable method to stop such winter killing.

That, of course, is just a sample of the sort of job which the Institute is called upon to tackle. There are dozens of them--big, medium and small and more coming up all the time. Within recent years we have managed to get fair-to-good answers to such questions as: Do fish actually use the "ladders" over the larger dams in our rivers? Do beaver dams improve or damage our trout streams? Do fish ducks destroy many trout in winter on our northern streams? What are some of the ways to improve food, shelter and spawning grounds? ^{for fish} What is the best method of measuring the angler's catch, that is, to learn the size of our annual fish crop as actually harvested?

Right now the principal problems on which we are working would list about as follows: What are the winter habits and needs of our fish? How many of the millions of fish planted live and grow so as to reach the angler's creel, and what are the best sizes of fish and seasons for such plantings? What satisfactory substitutes are there for the expensive meat diets now used in feeding hatchery trout? How large a crop of bass,

trout and other fish will our different types of waters yield, per acre and per year.

To sum it all up--our job is to be continually hunting out new and better ways to manage our fish crops so as to help maintain Michigan's reputation for high quality and dependable fishing.

A. S. Hazzard, Director
Institute for Fisheries Research