

INSTITUTE FOR FISHERIES RESEARCH  
UNIVERSITY MUSEUMS  
UNIVERSITY OF MICHIGAN  
ANN ARBOR, MICHIGAN

Report 275

March 4, 1935

REPORT ON THE DETRIMENTAL REMOVAL OF TROUT FOOD FROM THE STREAMS OF  
KALAMAZOO AND ADJACENT COUNTIES IN MICHIGAN

During the winter of 1934-35, it was brought to the attention of the Institute for Fisheries Research that surprisingly large and numerous catches of bluegills were being made in southwestern Michigan lakes, through the use of caddisfly larvae as bait. Recognizing the harm which might result to streams through the collection of these larvae, the Institute planned an investigation of this problem. On February 18, 1935, an urgent request to undertake this investigation as soon as possible was received from the Fish Division of the Michigan Department of Conservation. Since the greatest amount of apprehension of this situation was expressed by conservation officials of Kalamazoo County, this region was selected for investigation.

During this survey which extended from February 25-28, every trout stream, and most of the non-trout streams of Kalamazoo County were observed for at least a part of their length. In this survey, Conservation Officer V. D. Winey rendered great assistance.

At the present time, according to Conservation Officer Winey, approximately sixty miles of trout stream exist within the boundaries of Kalamazoo County. Although many non-trout streams were investigated, the trout waters will be discussed at greatest length.

The average trout stream is seldom over 25 feet wide, and is usually between 5 and 15 feet in width throughout most of its course. It usually originates in an extensive seepage area, and is augmented by numerous marginal springs throughout its course. It is extensively grown with water cress (Radicula Nasturtium-aquaticum), usually on both sides, with the current restricted to a narrow, meandering median channel. There are also a few additional rooted aquatic plants, but these are so scarce as to have little

influence on stream economy. There is at times a large amount of shifting sand in the stream, which is kept scoured from the underlying gravel by the action of the encroaching vegetation, which deepens and accelerates the flow.

The vegetation is of manifold importance in the economy of the stream. In addition to the above-named service of keeping the gravel of the bottom free from sand, it affords protection and cover to trout, aids greatly in keeping the water cool, and, perhaps most important of all, furnishes a rich food supply. The fine silt which accumulates under the plant bed teems with invertebrate life, (most of which is valuable fish food), such as scuds or shrimp, (Gammarus and Hyalella), midge larvae (Chironomidae) and horse fly larvae (Tabanidae); and to a lesser extent larvae of various species of dragonflies and aquatic beetles, while the vegetation itself offers harborage to an equally plentiful fauna, such as several species of caddisfly larvae, midge larvae, and soft-shelled snails of the genus Physa.

That the cumulative effect of all these factors made for highly satisfactory trout-fishing, especially brook and brown trout, is borne out by the testimony of Conservation Officer Winey and over a score of trout fishermen contacted. The streams are stocked heavily each year by state fish hatcheries, but have hitherto successfully withstood very heavy fishing. According to Mr. Winey, the opening day of the 1934 season found fishermen stationed at hundred-yard intervals along Spring Brook, considered to be the best trout stream in the county.

Apparently, the use of caddisfly larvae as bait in winter bluegill fishing began in this region 5 or 6 years ago. At first the method was kept secret by its discoverers, and did not become common knowledge until the winter of 1934-35, although there was a marked increase in the practice during the winter of 1933-34.

The form of caddisfly most highly esteemed as bluegill bait, and most extensively collected by fishermen and bait-hunters, is the larva of Neuronia postica, a large, plump caddisfly building a characteristic larval case from squarish sections of leaves. This smooth, cylindrical case has earned for the species the amusing local name of "reedamite". It is also occasionally erroneously termed "hellgrammite", a name properly

applied to the dobsons (Corydalis and Chauliodes). It prefers slowly moving streams of spring water, but may be found in considerable numbers along warm streams where seepage enters. In Kalamazoo County they were found to be especially numerous in an old interurban grade excavation, which was thickly grown with cat-tail, and into which enough spring water seeped to keep up a slight current.

In the trout streams, these larvae occur in numbers in the water cress, and it is here that fishermen and bait hunters have wrought the greatest havoc. The larvae command a good price (from \$1.40 per hundred wholesale to 25 cents per dozen retail), making their taking a paying business, and for this reason large numbers of persons have been engaged in hunting them. The method employed by the majority is to drag the cress up on to the bank of the stream with a garden rake, and, after looking through it for caddisfly larvae, to leave it there to dry out, or to throw it back into the stream to be washed away by the current, and so lost to further usefulness. So widespread has this practice become that only a very small amount of the original vegetation remains in any of the streams in the county, trout or non-trout. The writer was shown every trout stream, and most of the non-trout streams, in the county, and in none of them was any appreciable amount of vegetation left. In order to see a stream retaining its normal supply of water cress it was necessary to go to Van Buren County, where on a short section of Campbell's Creek a farmer succeeded in preventing removal of aquatic vegetation.

The following localities were visited:

Kalamazoo County

Trout streams.—Burns Creek, T. 1 S., R. 11 W., Sec. 14 & 23; Spring Brook, T. 1 S., R. 11 W., Sec. 25, 26 & 27; T. 1 S., R. 10 W., Sec. 5, 8, 18 & 19; Augusta Creek, T. 1 S., R. 9 W., Sec. 9, 15, 16, 21, 22 & 27; Davis Creek, T. 2 S., R. 10 W., Sec. 25 & 26; Portage Creek, T. 2 S., R. 11 W., Sec. 34, T. 3 S., R. 11 W., Sec. 3, 12, 16, 19, 20.

Non-trout streams.—Little Portage River, T. 3 S., R. 10 W., Sec. 12, 24, 26, 27 & 33; Flowerfield Creek, T. 4 S., R. 12 W., Sec. 17 & 20; Gull Lake Outlet, T. 1 S., R. 9 W., Sec. 31, T. 2 S., R. 9 W., Sec. 6 & 7; Kalamazoo River, T. 2 S., R. 10 W., Sec. 24, T. 2 S., R. 11 W., Sec. 19.

Other less important streams were viewed incidentally.

Concerning all these streams, the same thing can be said: all formerly supported a very profuse growth of water cress, and now every stream has been practically cleaned out, to the extreme detriment and possible elimination of trout fishing in this county.

There is ample testimony that this condition has become general all over the southwestern part of Michigan. Reports indicate that conditions like those observed in Kalamazoo County exist in Allegan, Van Buren, and Barry counties, and are only a little less severe in Branch and Berrien counties.

The results of the stripping of stream vegetation, especially on trout streams, is readily apparent. The removal of the watercress deprives the stream immediately of the large quantities of food organisms entangled or living therein. The removal of the vegetation leaves all the extensive muck bars at the mercy of the current by the action of which they must soon be washed away. The restricting action of the vegetation upon the current is removed, and the channel becomes much broader, the water shallower and slower flowing, permitting the large amounts of shifting sand always present to spread over the stream bed, covering the gravel areas formerly kept clean, thereby destroying both a rich food supply and good spawning conditions. The removal of vegetation deprives trout of valuable cover, and protection from predators. Furthermore, reports were received from competent observers that young trout are frequently removed with the vegetation by becoming entangled in it. The important function of keeping the water of the stream cool is lost, permitting the increased surface of the water to pick up heat much more rapidly.

The rough methods employed by bait-hunters have resulted in the removal of most of the roots of the vegetation, along with the stalks; and according to the local conservation officials, bait-hunters are now returning to the devastated streams and digging up such root stubs as remain, since these frequently harbor one or two caddisfly larvae.

Severe inroads have undoubtedly been made on the bluegill populations of most of the lakes in the affected area. Although the writer lacked time to make a careful survey of bluegill catches in the region, he heard much testimony, from reliable sources, to the

Table I. Record of observations on lakes of Kalamazoo County

Date	Lake	No. fisher- men	Weather	Ave. no. fish per fisherman contacted	Ave. no. under- sized fish re- turned per fisher- man	Ave. size of fish taken (inches)
2/9/35	Atwater's Pond	153	good	12 bluegills	1 bluegill	9
2/15/35	Sugar Loaf	34	bad	8 bluegills	1 "	9
2/15/35	Barton	47	bad	13 "	3 "	8
2/15/35	Black	4	bad	8 "	4 "	8
2/15/35	Rawson	4	bad	14 calico bass	...	10
2/16/35	Long (Pavilion Twp.)	51	bad	14 bluegills	6 bluegills	7
2/16/35	Long (Climax Twp.)	4	bad	1 pike	...	20
2/17/35	Schoonover	9	windy	1 sunfish 12 bluegills	2 sunfish 6 bluegills	7
2/17/35	Campbell's	49	windy	13 bluegills	2 bluegills	8.5
2/17/35	Sherman	11	windy	10 bluegills	3 "	7
2/17/35	Gull	40	windy	10 "	2 "	8
2/18/35	Campbell's	65	warm (snowing)	6 "	1 "	8
2/19/35	Sunset	19	good	22 "	17 "	6.5
2/20/35	Long (Pavilion Twp.)	43	windy	12 "	7 "	7
2/20/35	Sunset	14	windy	16 "	9 "	6.5
2/21/35	Campbell's	46	windy	9 "	1 "	8
2/21/35	Three Lakes	4	windy	7 "	4 "	7
2/21/35	Lime Kiln	6	windy	7 "	5 "	7
2/22/35	Gull	14	fair	5 bluegills 3 perch	1 bluegill	8 10
2/24/35	Little Long	27	warm	7 bluegills	...	8

effect that record catches are being made on most of the lakes, and that large numbers of fishermen are present on the lakes every day. The appended record is furnished through the courtesy of Conservation Officer V. D. Winey, who has made an effort to estimate the extent of the catch of bluegill and other species.

Although the above table represents observations for only a short period of time, we received assurance from many fishermen, as well as from Mr. Winey, that fishing operations have been just as extensive all through the season. That there has been a terrific drain on the bluegill populations of all the lakes in the affected area is instantly apparent.

Just what the ultimate affect of this winter drain of bluegills will be on future general fishing in this region we are as yet unable to forecast, and will be for some time to come. There are undoubtedly lakes in southern Michigan which are now carrying too great a bluegill population, thereby tending to dwarf the adults. In these this intensified winter fishing would be beneficial. However, there are also many lakes in southern Michigan in which the bluegill population is at present either normal or subnormal. On this class of lakes, increased winter fishing will be detrimental.

The above observations and conclusions may be summarized as follows:

(1) In Kalamazoo County, water cress is the only aquatic plant found in any quantity in trout streams, and normally occurs there in great profusion.

(2) Water cress is of great value in the economy of trout streams for it (a) supports a rich supply of trout food organisms; (b) builds up extensive muck bars, which also are rich in trout food organisms; (c) keeps the channel free from shifting sand, leaving exposed gravel beds which produce a large amount of trout food organisms and provide suitable spawning conditions for trout; (d) protects the bank from erosion, and aids very greatly in keeping the water cool; (e) offers invaluable protection and cover to trout, in a region where other types of cover would be impractical.

(3) In Kalamazoo County, and in other counties in the southwestern portion of Michigan, practically all beds of water cress have been torn from the streams by those searching for caddisfly larvae to use as bait for bluegills and other species of fish.

(4) Evidence at hand indicates that bait-collecting activities are being constantly extended, and may soon menace most of the trout waters of the state, especially since these larvae command a high price. There is much reason to fear that the best trout waters of the state may soon be invaded, since the bait-hunters are constantly working farther north.

(5) Since it is generally agreed that water cress is a plant which takes from 1 to 5 years to reestablish itself, in beds, the situation is not a temporary one, but constitutes a danger of major proportions.

(6) Tangible records and testimony of responsible persons are unanimous in pointing to an alarmingly heavy drain on bluegill populations in the affected regions.

The Institute for Fisheries Research therefore recommends that the Michigan Department of Conservation take steps (1) to prohibit the removal of trout food from all Michigan streams designated as trout waters, and (2) to prohibit the removal or disturbing of aquatic vegetation in trout streams for any purpose other than the removal of water cress for human consumption.

It is suggested that thought be given to the fact that the removal of water cress from non-trout streams destroys a very large amount of invertebrate life which may be considered as a reservoir of potential trout food. Furthermore, the inlets of lakes, which are hard worked by bait-hunters, supply an important feeding and spawning grounds for valuable lake fish, and the destruction of these regions by bait-hunters is not practical conservation. Also, many of the non-trout streams of this region, are potential small-mouth bass and pan fish streams, and destruction of non-trout stream food supplies through removal of vegetation or further destruction of habitat must greatly delay the future recovery of such waters.

We do not, however, recommend at this time that the taking of bait from non-trout waters be prohibited, as we consider the protection of trout streams vastly more important, and do not wish to recommend anything that might detract from the possibility of getting immediate protection for trout streams.

INSTITUTE FOR FISHERIES RESEARCH

*Justin W. Leonard*  
Justin W. Leonard, In Charge, Trout  
Stream Evaluation Program.