Original: Fish Division
cc: Mr. Reuben Rowe
Mr. Ruhl

INSTITUTE FOR FISHERIES RESEARCH
DIVISION OF FISHERIES
MICHIGAN DEPARTMENT OF CONSERVATION
COOPERATING WITH THE
UNIVERSITY OF MICHIGAN

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REPORT NO. 522

EXAMINATION OF TROUT STREAMS IN KEWEENAW COUNTY

At the direction of Mr. F. A. Westerman, Chief of the Division of Fish and Fisheries, an examination was made of the principal streams of Keweenaw County to determine their suitability for trout. The investigation was urged by the Copper Country Conservation League through its president Reuben J. Rowe.

The following assisted the author in the survey: Dr. David S. Shetter, Dr. J. W. Leonard and Mr. Edwin L. Cooper. Conservation Officer John Chriskie aided us materially by furnishing information concerning the streams and how to reach sections where no roads were shown on the county map. Mr. Rowe and other sportsmen spent some time in the field with the party, guiding us to tributaries of the Montreal River, some of which were not shown on the map. These men, particularly, Mr. Rowe, were of great help to us in the investigation.

The party started field work on August 6 and finished August 18. No attempt was made to cruise the streams in their entirety. This would have been a full summer's work for the entire party. Such an intensive study was not possible at this time. Streams were examined for at least 100 yards up and downstream from the road or trail crossing in order to be sure that a good idea of the character of the water was secured. Survey forms (sample

in Appendix) were filled out for each stream examined. The better streams were fished by seine or by rod or both to determine the species of fish present and their size and relative abundance. On the afternoon of the one day of high air temperatures (Sunday, August 14), the party took readings on all important streams where these could be reached by road. The water temperatures taken on this day clearly indicated the better trout streams and explained why others, which have been stocked, do not yield trout fishing during the warmer months of the year. (See Table 1 at end of report for temperature readings and certain other important data.)

Characteristics of Good Trout Water

In order to support trout, a stream must have an adequate flow of water of suitable temperature and must be free from polluting substances. Unless the water remains below 75° (and preferably below 72°) on the hottest days of summer, it cannot be considered a brook trout stream. Only one or two days of higher temperature will result in the death of all the trout unless cold tributaries or spring fed pools are present to which the trout can retire. The carrying capacity of a stream is therefore limited to that portion of the stream having proper temperature, and stocking more trout will simply be a waste of fish. This condition might be likened to the seige of a city during war time in which the entire population is forced to live in a fort on a limited food supply. Unless relief comes soon, only those which can be sheltered and fed will survive.

Brown trout will endure for short periods a maximum temperature of 78°; rainbow trout up to 80°, but our better trout streams do not reach these peak readings in the sections where good summer trout fishing is found. Also, it has been found that trout will survive these high temperatures better if there is a large flow of water.

In addition to proper temperature, trout must have sufficient food and shelter. In the table at the end of this report will be found food grades for the streams examined. Fishery biologists consider a stream as having a I or exceptional food grade if there is more than two cubic centimeters (about 1/2 a level teaspoonful) of food per square foot of bottom in the riffles; II or average if between one and two cc. per square foot; and III or poor if less than 1 cc. per square foot. A net was used to take samples at certain places on the more important streams. Elsewhere the grade was estimated after examining the stream bottom at the station.

Pools are graded as to size, type and frequency, much as a fisherman would classify the pools on his favorite trout stream. A grade of A for best, B for average and C for poor is given. A fisherman knows that where pools are numerous and deep with plenty of shelter, he will find the best fishing. Scientists have found that such streams support the largest number of good sized trout.

Spawning conditions must be good in order for nature to do her share in maintaining the trout population. Brook trout require spring-fed gravel areas in which to deposit their eggs. Brown and rainbow trout spawn wherever gravel riffles of the proper depth are present.

The area of a stream determines the size of the trout crop if other conditions are the same--within limits the larger the stream, the more trout it will produce. Fish are crops the same as corn or timber and a given area will yield only a certain amount, depending upon its suitability for the crop planted. Planting more pine seedlings or corn than can be supported by the soil results in death of a large number of young seedlings or in a stunted crop. The same rule applies to planting fish whether nature does the planting either alone or assisted by man.

Suitability of Keweenaw Streams For Trout

Physical Conditions.

The same geographic and geologic features responsible for the superb scenery in the Keweenaw Peninsula are responsible for its relatively poor trout streams. The mountain ridges and rocky soil allow the moisture to run off rapidly to Lake Superior, even though the forest cover is quite dense over much of the area. Because of the nature of the soil, springs are relatively few and the best of these are found in the southern part, where the sandy soil absorbs at least a part of the moisture, releasing it later where the impervious layers below outcrop in the stream valley.

If all the springs on the Peninsula fed into one river system they would probably form an excellent stream (some 300 miles in length including tributaries), but as the drainage is split up by the high ridges, the result is a series of small streams, most of which have inadequate flow and high temperatures during the summer months and which are subject to heavy flooding during the spring run-off.

Stamp sand from the now abandoned mills still pollutes certain portions of the streams in Keweenaw County, filling pools, smothering out fish food and covering gravel which would otherwise be suitable for spawning. However, this pollution is not as serious as it might be since most of the streams carrying stamp sand are not trout streams because of high temperatures.

Beaver.

Beaver dams, active and abandoned, play a part in warming the streams but also help to maintain the flow by holding back the water. As a result of his investigation of beaver-trout relationships, J. Clark Salyer recommended that beaver be encouraged on the short tributary streams of Lake Superior, but felt that beaver dams should be removed on the head and the

tributaries of the Montreal River. The dams on this stream and its tributaries were removed in 1935, but no trout were found in this river during our survey. Local fishermen familiar with the Montreal state that some trout are caught in the river at the start of the season when the water is still cold, but not during the summer, except in a few spring-fed pools. They are probably correct in their assumption that these trout have moved down from the beaver ponds on the tributaries. It seems questionable whether keeping beaver dams out of this river system would lower the temperature in the main river sufficiently to make it trout water. Before the original timber was cut and the stamp sand had killed off shore vegetation and before beaver formed the meadows at the source, the Montreal may have supported brook trout throughout the summer. Unless brown or rainbow trout can be established (browns have been stocked for the past three years with practically no results), it is our belief that the Montreal should not be considered trout water and that its tributaries should be treated the same as the short tributaries of Lake Superior insofar as beaver-trout management is concerned. The present beaver ponds on these streams seem to be furnishing good trout fishing for the few fishermen hardy enough to find and fish them and probably will continue to do so without any artificial plantings.

A number of the smaller streams, e.g. Jacobs and Vulcan creeks, because of their small size furnish trout fishing only in the beaver ponds. However, even in such streams some beaver ponds will become stagnant and non-productive so that removal of dams may be called for at intervals, but such cases should be investigated carefully before the dams are removed. Because of their precipitous nature, which usually limits the size of the ponds, and because the majority of dams in this area are washed out by spring floods soon after they are abandoned by the beaver, it is not believed

that much interference with the dams by man will be required. However, such dams should be removed and all dams kept out on streams tributary to Lakes Manganeese and Fanny Hoe. At present there are reported to be several beaver dams on French Annie Creek which block the spawning run of trout from Manganeese Lake. These should be torn out before the spawning season of trout another fall. Beaver dams should also be kept out of the following streams and their tributaries: Gratiot River, Traprock River, and Traverse River. Temperatures in these larger streams now approach the danger point, so that any new dams might easily convert them into non-trout waters.

The Food Supply.

In most of the streams examined, trout food appeared to be below average. This is probably due to the extreme fluctuation in volume and to the destruction by spring floods. The food should be improved somewhat by the improvement in pools as suggested later, but it will probably always be rather scanty because of the natural shrinkage of the streams during the summer.

Spawning conditions appeared to be unusually favorable for brook and rainbow trout in nearly all of the streams otherwise suitable for these species. Large numbers of young brook trout from natural spawning of the preceding fall were taken in most of the streams, particularly in the spring-fed tributaries of the Montreal and in Traverse and Betsy creeks and the Gratiot River. Rainbow trout from Lake Superior ascend all of the tributary streams as far as impassable falls during the spawning season and apparently fully stock (if not actually over-stock) such waters with their young. This was observed and checked by seining on Traverse, Betsy and Winters creek on the east side and in Gratiot River, Silver Creek and Silver River on the west side. This is also reported to be the case in the lower end of

the Montreal River and all other permanent streams entering Lake Superior. It also seems likely that spawning runs of "coaster" brook trout enter these streams to spawn.

Highly successful natural reproduction, both from spawning runs of trout from Lake Superior and from non-migratory brook trout, render the need for planting hatchery fingerlings in Keweenaw streams even less urgent than would be the case if spawning conditions were poor.

Pools.

While certain parts of streams were found to contain frequent deep pools with adequate shelter for trout, e.g. the lower Gratiot River, others are notably deficient in "homes" for trout, i.e. pools of sufficient size and depth to shelter adult trout. Trout producing pools (and consequently trout fishing) could be increased considerably by man-made pools, especially on such streams as the Traverse River, Hill Creek, Traprock River, upper Gratiot River and Silver River. However, any dams or deflectors installed would have to be well constructed to resist the heavy spring floods. Also, provision would have to be made to repair or replace these structures as necessary during succeeding years. It is our opinion that better trout fishing would result in Keweenaw streams as a result of a well supervised program of stream improvement than through increased fingerling trout plantings. Methods for such stream improvement were worked out on an experimental basis by the Institute (as described in Bulletin No. 1, Methods for the Improvement of Michigan Trout Streams) and have been put into effective practice by the CCC in other parts of Michigan. An abundance of material in the form of boulders, gravel and logs are readily available, so that the principal cost would be for labor and skilled supervision. It is estimated that the number of pools for adult trout (and consequently fishing places) could be increased at least 100% in certain sections of

the better trout streams. We do not mean to imply by this statement that exceptional trout fishing can be produced by the improvement of Keweenaw trout streams any more than such fishing could be created by more extensive hatchery planting, because as stated previously, the principal limiting factor in the Keweenaw Peninsula is a scarcity of permanent, cold water. Nevertheless this program would be in line with developing the natural resources of the area to the maximum of which they are capable and should therefore be adopted.

Intensity and Quality of Fishing.

Keweenaw streams are mostly very difficult to fish, being small and, in many places, densely shaded with brush. Only the lower ends of the larger streams and the beaver ponds can be fly fished. During the two weeks we were on these streams our party encountered a total of seven fishermen, all using bait. From personal experience, we found fishing with flies difficult but generally more productive than in the larger, more heavily fished streams of lower Michigan. Almost every pool which could be fished yielded at least one legal trout and many trout below legal size were taken. Several of the better fishermen told us that they were able to get a mess of brook trout nearly any time they wanted to, but that fishing was tough and you had to know where to go. This is the usual story anywhere one goes in the United States. At times expert fishermen can make limit catches on the heavily fished streams which are readily accessible, but as a general rule consistently good trout fishing can only be found where the waters are hard to reach, hard to fish and little visited. The good-sized trout population (for the size of the streams) and the evident success of natural reproduction are due to the difficult or relatively inaccessible fishing and to the relatively light fishing intensity.

Streams Suited to Trout and Stocking Recommendations.

The following streams of those examined had conditions suitable for brook trout during the investigation: Big Betsy River, Winters Creek, Tobacco River, Traverse River, Traprock River, Hill Creek, Gratiot River, Silver Creek, Garden City Brook, Jacobs Creek, Cedar Creek, Silver River and certain tributaries of the Montreal River. Other small tributaries of certain streams or of Lake Superior may be suitable for brook trout but were not examined because of difficulty of access. For this same reason they will not require stocking.

No one is able at present to state with any degree of accuracy the number of fingerling trout which should be planted in any Michigan stream in order to produce the best fishing. However, it seems reasonable to assume that where fishing is as difficult as in Keweenaw streams and where natural spawning is so effective, little if any fingerling planting is needed to maintain the maximum yield of trout. To plant such streams would be like doubling the usual number of grains of corn to a hill or planting more maple seedlings where the ground is already carpeted with young trees.

The program as followed in the past, of planting limited numbers of trout in those portions of the better trout streams which are most accessible and which are most heavily fished, is probably the best which can be followed at the present time. When the results from experimental streams are available, it should be possible to estimate more closely the number of trout of a given size range needed to produce the maximum yield. It is our conclusion that the annual planting of some 24,000 fingerling trout (as during the past two years) is probably adequate and in fact may represent overstocking when the factors mentioned previously, i.e. limited water and food, high trout population, difficult (and therefore light) fishing intensity and successful natural reproduction, are considered. The writer knows of

no waters in Michigan of comparable size, quality and fishing pressure which are so heavily stocked as these streams have been during the last five years.

Improvement of the fishing in the Montreal River presents a special problem. During 1933 and 1934 a total of 14,200 brook trout were planted in the stream. Evidently the results were not considered satisfactory, as no trout were stocked in 1935 (a season of unusually low water and high temperature) and brown trout plantings only were made in 1936 and 1937 (total 8,000). A very few brown trout have been reported caught. Temperature readings and failure of our party to take trout by seining or fishing at any point in the Montreal indicate that this water becomes too warm for brook trout during the summer except in several small tributaries (already well stocked by natural spawning) and possibly in sections of the river cooled by springs (such limited areas are reported to be present below Mandan).

Since rainbow trout will tolerate for short periods temperatures several degrees higher (up to 80°F.) than brook or brown trout, it seems possible this species might furnish some summer fishing in the Montreal River if they will remain above the falls. Most rainbow trout are migratory and tend to seek larger water downstream after the second or third year. If this should occur in the Montreal, a little fishing for small trout might result for a year or two following planting, but the survivors would go over the falls and be unable to return as adults to spawn. However, the writer is familiar with at least one stream no larger than the Montreal where rainbows remain permanently resident and maintain their numbers consistently in spite of heavy fishing and no stocking whatever. It is therefore recommended that heavy plantings (10,000 of each species annually) of rainbow and brown trout fingerlings (some adult planting might also be

desirable in this case) be made in the Montreal during the next three years. It would seem best to plant the majority of these where the old road goes in close to the stream near Mandan. The upper waters in the "Montreal Meadows" should receive a few, but none should be planted at present between the old Delaware stamp mill and Mandan. This section of the river is filled with stamp sand and almost barren of food. Deflectors to narrow and speed up the stream would do much to improve food and shelter for trout.

If good fishing results from such plantings and either one species or both reproduce successfully (and conditions should be suitable for spawning in most parts of the river), little planting should be required thereafter unless the fishing pressure increases markedly or the stream is made more accessible by new roads. If poor results are secured after three years of heavy plantings, the Montreal should be abandoned as a trout stream and stocking should be discontinued.

Need For a Trout Rearing Pond in Keweenaw County

As indicated in this report, our investigation has not disclosed need for a heavier trout fingerling planting program than has been in effect during the past five years. Since the Otter River Rearing Station in Houghton County can easily supply enough trout to meet the estimated need of the waters in Keweenaw County, there seems to be little justification for establishing such a rearing pond in this county.

Furthermore, our investigations failed to disclose any suitable site for a rearing pond in Keweenaw County if it were necessary. Two sites were suggested by members of the Copper Country Conservation League: on the Montreal River just below the Lac LaBelle road crossing at Wyoming and on Cedar Creek. A water temperature of 77° was taken at the former site.

Great beds of shifting stamp sand in the meadows about this site further makes this location undesirable. Cedar Creek has too small a flow of water to provide for a rearing pond of sufficient size to raise more than 20,000 fingerlings. It is also subject to severe floods at certain times judging by the piles of logs and other debris in and along the stream bed.

INSTITUTE FOR FISHERIES RESEARCH

A. S. Hazzard
Director

Name of stream	Where examined	Ave. width, Maximum depth	Temperature Air	Temperature Water	Pools	Food	Fish present
Aetna	U.S. 41 crossing	2'x2"	72	59	Poor	Poor	Few trout, few minnows
Betsy River	Mouth to 400 yds. above	20'x2'	70	58	Good near mouth	Ave.-	Brook, rainbows. Good fishing
Black Creek	Headquarters, also mouth, T57-33-- 23, 35, 36	30'to 4' 3½' to 6"	71	66	Poor	Poor	None taken or seen
Camp Creek	Gay-Mohawk crossing	3'x6"	88	66	Fair	Ave.	" " "
Cedar Creek	T58N,R31W, Sec.8	6'x2" to 18"	68	60	Fair	Ave.+	Legal size and young brooks
Central Creek	Houghton, Sec. 29		91	79			Small streams not worth stocking
W. Br. Central	" "		91	78			
Cliff Creek	Allouez, Sec. 1		91	70			
Copper Creek	Grant, Sec. 16	10'x3"	67	68	Poor	Ave.	Minnows
Eagle River	Eagle Harbor, Sec. 30	12'x10"	91	75	Poor	Poor	Young suckers observed
French Annie	Eagle Harbor, Sec. 1	3'x4"	72	63	Poor	Poor	None seen
Garden City	Eagle Harbor, Sec. 18-21	5'x2" up to 12	91	67	Ave.	Ave.	Brook trout of all sizes seen
Gratiot River	200 yds. above mouth at Lake Superior	25'x6" to 3'	73	67	Ave.	Ave.+	Rainbow, brook, minnows
" "	At and above falls	30'x1'to 4½'	70	60	Ave.+	Ave.	Rainbow, brook, minnows
" "	Allouez, Sec. 19	25'x6"	75	64	Poor+	Ave.+	Brook trout seen
" "	Allouez, Sec. 21	20'x8"	66	68	Ave.	Ave.	
" "	Cliff Drive crossing	15x3"	89	71	Ave.-	Ave.-	Brook trout taken
" "	U.S. 41 crossing	10'x4"to 2'	90	68	Ave.	Ave.	Brook trout taken
Hill Creek	At mouth	60'x3' up to 5'	71	68	Poor	Very poor	Small minnows; polluted by stamp sand
" "	Above old stamp mill	15'x10'	72	65	Ave.	Ave.	Brook trout present

Name of stream	Where examined	Ave. width, Maximum depth	Temperature Air	Temperature Water	Pools	Food	Fish present
Hill Creek	Cross roads in T57,R33,Sec.36	6'x6" up to 20"	92	73	Ave.-	Ave.	Brook trout present
" "	Cross road just S. of county line	6'x4" up to 20"	78	70	Ave.-	Ave.	Brook trout seen
	T56, R33, Sec. 2	4'x10" up to 24"	75	68	Excel-lent	Ave.	" " "
N. Br. Hill	57, 33 - Sec. 30 crossing	4'x6" up to 2'	76	64	Poor	Ave.-	None seen
Jacobs Creek	Dune Road to Lake	5'x2"	70	55	Ave.-	Very poor	Small trout seen
" "	Upper road crossing	5'x3"	70	57	Ave.	Ave.	None seen
Liza Creek	#584 crossing	Appears to be a temporary stream					
Medora River	U.S. 41 crossing	10'x6"	70	70	Ave.-	Ave.-	Too warm at this point for trout
Montreal River	Star Bridge	30'x6"	77	72	Ave.-	Ave.	No trout by fishing; minnows seen
" "	T58,R29, Sec. 14	25'x18"	69	65	Ave.+	Ave.+	No trout seen; none by fishing
" "	Mandan	20'x18"	66	60	Ave.+	Poor+	No trout seen; none by fishing
" "	T58,R30, Sec. 13	30'x18"	70	71	Ave.+	Very poor	Many minnows
" "	Lac LaBelle road crossing	18'x1'	87	77	Poor+	Very poor	No trout. Minnows taken
" "	T58,R30, Sec. 16	20'x1'	86	78	Ave.	Excel-lent	" " "
" "	Just below S. Pond Creek	20'x2'	88	73	Excel-lent-	Ave.	No trout seen
Feeder to Montreal	T58,R30, Sec. 23	3'x4"	70	61	Ave.	...	Brook trout caught
S. Pond Brook	T58,R30,Sec. 20	4'x16"	71	64	Ave.+	...	Brook trout reported
Feeder to Montreal	T58,R30, Sec. 21	4'x6"	70	55	Ave.-	...	Brook trout reported
" " "	T58,R30, Sec. 22	4'x6"	67	57	Ave.	...	Brook trout caught

Name of stream	Where examined	Ave. width, Maximum depth	Temperature Air	Temperature Water	Pools	Food	Fish present
Owl's Creek	Dune Drive crossing	4'x6"	70	61	Ave.-	...	Dry at 584 crossing
Silver River	Shore Drive crossing	25'x16" to 10'	70	65	Ave.	Poor+	Rainbow seen below falls
" "	100 yds. above E. Br.	10'x3"	74	58	Poor+	Poor	None seen
" "	Outlet of L. Upson	8'x2"	74	66	Ave.-	Poor+	Minnows seen
L. Silver R.	1/8 mi. below L. Bailey	2'x6"	74	63	Poor	Poor	None seen
Silver Creek	Allouez--at mouth	10'x5"-2½'	74	63	Ave.	Poor+	Small rainbows very abundant
Tobacco River	100 yds. from mouth	15'x5"-2'	68	69	Poor+	Poor	None seen
" "	1/2 mile above in Cay	10'to 80' to 4' deep	71	67	...	Poor+	Minnows, perch, forage fish
" "	1½ miles above at pool	30'-50' x 3'-7'	93	73	...	...	Trout reported caught
" "	Fireline in Section 35	25'x18"	74	66	Poor	Ave.	Trout observed
Black Brook	Fireline in Section 11	Pool stagnant at bridge--stream intermittent					
Traprock River	Copper City-L. Linden crossing	30'x6" to 1'	93	75	Poor+	Poor	Stamp sand pollution
" "	Houghton Co. - 1 mile above Copper City-L. Linden crossing	30'x3"	93	73	Ave.-	Ave.	
" "	150 yds. below Mohawk-Cay road	15'x6"-30"	92	66	Ave.	Ave.	Trout seen here
Traverse Creek	Near village	30'x3'	93	70.5	...	...	.....
" "	1 mi. above	20'x3'	74	61	...	...	.....
" "	Cay-L. Linden crossing	20'x6"	69	64	Ave.	Ave.-	Brook, rainbow taken here
" "	Cay-Mohawk road crossing	4'x1 up to 3	93	70.5	Ave.	Poor	None seen
Winters Creek	At mouth, Sec. 35	12'x8" to 5'	70	64	Ave.+	Poor	Rainbow and brook taken by fly.

STREAM SURVEY

INSTITUTE FOR FISHERIES RESEARCH
Division of Fisheries
MICHIGAN DEPARTMENT OF CONSERVATION
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1. MAIN DRAINAGE — Name of Stream — Trib. to
2. STREAM SECTION: No. — From
   To — Length
3. County — Township — T. — R. — Sec.
4. Dredged — How Recent?
5. Tributaries—Name Streams and prevailing Fish

6. WATER SUPPLY — Present level
   Degree of flooding
7. POLLUTION

8. DAM—Location — Owner — Use
   Head — Effect on level — Passable for fish?
9. IMMEDIATE SHORE
10. SURROUNDING COUNTRY
11. USE OF WATER: Ownership — Recreation?
12. FISHING: Public fishing — Easily fished?
13. General reputation
14. History
15. Use as minnow stream
16. Previous stocking
17. SPECIES OF FISH: Game fish
18. Coarse fish
19. Obnoxious fish
20. Forage fish

21. SPAWNING GROUNDS
22. PREDATORS — BEAVER
23. REMARKS

24. STATION	Lower	Middle	Upper
Location			
25. AVERAGE WIDTH AND DEPTH			
26. VOLUME			
27. VELOCITY			
28. COLOR AND TURBIDITY			
29. AIR TEMPERATURE—Hr. and sky			
30. WATER TEMPERATURE			
31. POOLS—Size, Type, Frequency			
32. BOTTOM TYPES: Pools			
Riffles			
33. SHADE—COVER			
34. pH			
35. O_2 ppm.			
36. CO_2 ppm.			
37. M. O. Alkalinity			
38. AQUATIC VEGETATION			
39. Plankton			
40. FISH FOODS PER SQ. FT.			
Mayflies			
Stoneflies			
Bettles			
Caddisflies			
Midges			
Other Diptera			
Miscellaneous			
Others			
Vol. in cc. per sq. ft.			

Prepared by..... Date.....

STREAM SURVEY | **FISH COLLECTION**

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County: T ..... R ..... Sec .....

Lake Township .....

Point of examination Section No. Description

GEAR USED—kind Length Mesh

Area covered

Immediate SHORE

TEMPERATURE—Air Water

Weather (present and preceding)

WATER (Color, siltiness, etc.)

DEPTH Current velocity

BOTTOM

COVER

VEGETATION

NATURAL FOOD

REMARKS

DATE Time Field No.

COLLECTOR

FISH LIST ON REVERSE

No.	GAME FISHES	Size Range	Remarks
	Brook Trout		
	Brown Trout		
	Rainbow Trout		
	Northern pike		
	Perch		
	Small-Mouth Bass		
	.....Bass		
	.....Sunfish		
	Rock Bass		
	COARSE FISHES		
	Common Sucker		
	Hog Sucker		
	Mullet (M.....)		
	OBNOXIOUS FISHES		
	Dogfish		
	Carp		

No.	FORAGE FISHES	Size Range	Remarks
	Creek Chub		
	.....Chub		
	Black-nose Dace		
	.....Dace		
	.....Dace		
	Common Shiner		
	.....Shiner		
	.....Shiner		
	Blunt-nosed Minnow		
	.....Minnow		
	Mudminnow		
	Johnny Darter		
	.....Darter		
	.....Darter		
	.....Darter		
	Muddler (bairdii)		
	Muddler (cognatus)		
	Brook stickleback		