Reactor

MIGRATIONS OF TROUT IN MICHIGAN

SHOWN BY TAGGING EXPERIMENTS

1929

"By J. Metzelaar"

In 1928 the Department of Conservation started certain experiments on the migrations of various species of trout. Nearly 7,000 individual trout were marked with a small numbered tag of non-corrosive metal which when locked, measures nine-sixteenths of an inch in length. Trial attachments of the tag to the caudal fin proved unsuccessful. The majority of the trout were marked on the gill cover, in all cases where the texture of this part permitted the attachment.

All the rainbow trout were wild fish trapped while ascending certain streams of western Michigan. On the other hand, the majority of the brook and brown trout used in these experiments were hatchery reared. All of the brown trout and about 350 brook trout were large fish (see sizes, Table I-II); the balance constituted yearling brook trout. The older brook trout, ranging from 13 to 16 inches, were all planted on December 12, 1928 in the AuSable system.

The validity of experiments on migration with hatchery fish may, of course, be questioned. We have realized the objections against this method and have tried to duplicate the work with wild fish. The writer spent the time from November 5 to 9 th in the field in an effort to secure wild trout on the spawning beds which resulted in the tagging of 134 fish. This method is impractical for use on a large scale. We have been much encouraged by the significant fact: That whenever a brook trout was recovered at a considerable distance from the point of its release it invariably was a large fish. In other words, the fish which had been reared in the hatchery for the longest period showed the strongest migrations. (This feature has <u>not</u> been found in the case of brown trout).

Tables I-III give a summary of the proce dings. They show, that out of a total of 6721 marked trout 129 have been recovered, or a little less than 2%. This percentage would have been higher if no trout under 8 inches long had been used. This is proven by the fact, that, with but one exception, the smallest trout recovered was 8 inches long when planted, indicating the suitable minimum size for such experiments as the present one.

Our tables show a comparatively high percentage of recaptures from certain heavily fished western Michigan creeks and again only a single fish in certain Upper Peninsula streams. The fact that conspicuously few trout have been recovered from certain streams draining directly into Lake Superior would appear to indicate migrational movement among the trout of these streams is much stronger developed than in streams of lower latitude in Michigan.

Tables IV-VI present details on the migrations of brook, brown and rainbow trout. A study of these tables leads us to the following tenative conclusions:

1. 25 Records of recovered brown trout fail to show any migration. The experiment should be repeated with yearling fish from a different hatchery.

2. 60 brook trout were recovered from our plantings, comprising 58 good records. Of these, 6 records pertain to larger and older fish, 5 of which had traveled from 1½ to 12 miles downstream in the AuSable system. No less than 38 were recovered within one mile from the place where planted. The remaining 15 fish and either shifted slightly upstream (1 to 5 miles) or had moved downstream, the distance not exceeding 4 miles.

The conclusion seems warranted, that the brook trout is a (limit migrant and the extent of its travels bear a definite relation to its age and size.

3. Migratory movements of either brook or brown trout seem insignificant compared with those of the rainbow trout. It is very instructive to consider the record of 21 rainbows recovered from those put over the Stronach Dam on the Pine River. These trout ascended the Pine to spawn, preferring the main river and continuing upstream as far as Tustin a distance of 40 miles. After spawning they linger for a time in the stream, probably starting their descent in June. Some go down over the dam at Stronach (4 records), but as late as July 25th a rainbow was caught 27 miles above the dam. In other words, the fish which were put over the dam in April did not return to Lake Michigan immediately after spawning, but furnished considerable sport during the following open trout season. Two of the fish released above Junction Dam descended the Manistee for about 10 miles to the mouth of Pine Creek and ascended Pine Creek for a distance of 6 miles.

The record of other lots yield similar information. Trout put over the Junction Dam have been found as far upstream as the Slagle Creek. The most striking feature is furnished by the rainbows that were caught at different points in Lake Michigan (Manitou Island, Two Harbor Point, Wisconsin, Oostburg, Wisconsin, Kenosha, Wisconsin). It seems significant to know that a trout which had been stripped on April 24 and marked at Fox' Bridge in the Little Manistee continued its journey upstream, returned and was back on the feeding grounds on the Wisconsin side on July 27th.

These records tend to show that the adult rainbows of the Great Lakes are essentially fish of the large open waters where they can obtain abundant food. They ascend certain western Michigan streams to spawn, but just how long the young ones dwell in our streams before following their parents to the Lake has not yet been determined. We know that the Little Manistee, although a small and cold stream, has a denser population of baby rainbows than any other stream of the State. One of its most favorable features seems to be the total absence of dams or other impassable obstructions. The Big Manistee, though strongly harnessed, is also of importance. If we continue our tagging experiments on these two streams and on the Pere Marquette River we eventually may obtain a complete picture of the rainbow runs on these rivers. To this end the experiments should be coupled with scale studies. We want to know at what age both males and females ascend the

streams, how long they stay in the rivers and how often they repeat the spawning run during their life time. Also whether or not they return to the same stream every year, etc.

Incidentally our data reveals some information on the growth of trout during the spring and summer. This growth (see Table VI) appears to be slight and it is inferred that the main growth takes place during the fall months. In connection with this it may be remarked that out of 42 rainbows recovered 29 were males and 13 fema This might be due to the male fish regain their appetite sooner after spawning than the females.

The failure of our tagging experiments on the Pere Marquette River this year may have some relation to the presence of the "Flats" near Walhalla which obstruct the free passage of the fish. This matter has full attention of the Department of Conservation.

TABLE I

SUMMARY OF BROOK TROUT MARKING EXPERIMENTS 1929

No.in lot Planted	Number recovered	Smallest recovered trout,lgth. when planted	Date of Plant (1928)	Name of stream Where Planted
276	1	--	Oct.20	Salmon trout R.
286	-	--	"	" "
75	2	14"	Dec.12	AuSable,East Branch.
76	3	14	"	" ,Main Stream.
74	2	13¾	"	" ,North Branch.
75	3	12¾	"	" , " "
42	1	15¾	Oct.11	" ,South Branch.
44	-	--	"	" ,Main Stream.
55	-	--	" 12	" ,North Branch.
97	4	8½	" 11	" ,Main Stream.
98	2	9	" 13	" , " "
97	1	9¼	" 13	" ,South Branch.
100	1	9½	" 14	" ,North Branch.
98	2	9½	" 14	Big Creek,Crawford Co.
43	-	--	" 13	Manistee River,headwaters.
99	1	--	" 13	Green Creek,Marquette Co.
100	-	--	" 13	Chdrry Creek,Marquette Co.
99	-	--	" 13	Chocolay R.,Marquette Co.
96	-	--	" 13	Yellow dog R.Marquette Co.
93	1	--	" 13	Escanaba R.Marquette Co.
154	7	8¼	" 9	Cedar Creek,Wexford Co.
130	5	7½	" 9	Sopher Creek,Wexford Co.
147	10	8	" 10	Little Pine,Osceola Co.
147	-	--	" 10	Pine River, Wexford Co.
78	2	7¼	" 8	Clam River,Missaukee Co.
172	11	8	" 9	Bear Creek,Manistee Co.
113	1	8	" 8	Adams Creek,Wexford Co.
2,964-Total	- 60			

TABLE II

SUMMARY OF BROWN TROUT MARKING EXPERIMENTS 1929

No. in lot Planted	Number recovered	Smallest recovered trout, lgth. when planted	Date of Plant (1928)	Name of Stream Where planted
100	-	14¼ "	Dec. 8	Manistee River.
243	10	10½	" 5	Sauble R., Lake Co.
59	7	12	" 6	Gd. Traverse Bay.
99	1	16	" 7	Bear Cr., Manistee Co.
84	1	12½	" 7	Slagle Cr. Wexford Co.
98	1	13	" 7	Boardman River.
95	3	13½	" 10	Traverse Bay.
73	1	12	" 10	Crystal Lake, Benzie County
96	-	--	" 10	Lincoln River.
97	1	10	" 8	Little Manistee.
99	-	--	" 8	Platte River.
1,143-Total -	25			

TABLE III

SUMMARY OF RAINBOW TROUT MARKING EXPERIMENTS 1929

No. in lot Planted	Number Recovered	Date of Plant	Name of stream and place where planted.
71	2	April 30	Pere Marquette R. at Walhalla Weir
346	1	" 21	Pine Creek, Manistee Co.
119	3	" 30	Manistee R. below Junction Dam.
974	12	" 13,24	Little Manistee at Fox' Bridge.
386	17	" 18,26	Stronach Dam on Pine R. (carried over Dam).
499	8	" 17,23	Junction Dam on Manistee R. (carried over).
2,395 -Total -	43		

November 5-9 :-134 wild trout were tagged on spawning beds of which 1 was recovered. These comprised brook, brown and rainbow trout.

TABLE IV

RECAPITULATION OF RECOVERED MARKED BROOK TROUT 1929
(Condensed)

RELEASES			RECAPTURES	
Number	Name of Stream	Date 1928	Date	Distance traveled
2	AuSable, Main Stream	Oct. 11	May 13	None
1	" " "	Dec. 12	July 29	None
1	" " "	" 12	May 1	1½ mile downstream
1	" " "	" 12	May 14	6 miles downstream
1	" East Branch	" 12	May 1	7 " "
1	" " "	Oct. 14	May 12	None
1	" North Branch	Dec. 12	May 24	12 Miles downstream
1	" " "	" 12	June 22	6 " "
1	" " "	Oct. 14	May 12	None
2	" Big Creek	" 14	May 24	None
6	" Main stream (Fredrick)	" 11 &Dec12	May 1-15	None
1	" " "	Oct. 11	May 10	"Few miles" downstream
1	" South Branch	Oct. 11	May 8	None
8	Little Pine River	" 10	May 1,26	None
2	" "	" 10	May 7,29	Moved to Big Pine R, 1½ M
7	Cedar Cr., Wexford Co	" 9	May 1,14	None
6	Sopher & Adams Cr. Wexford Co.	" 8	May 1,25	None
1	Clam R., Missaukee Co	" 8	May 19	1 Mile upstream
1	" "	" 8	May 27	2 Miles downstream
4	Bear Cr., Manistee Co	" 9	May 1,9	None
7	" "	" 9	May 1-June 21	2 - 5 Miles upstream Bear Cr. & Tributary
2	Green Cr., Marquette Co.	" 13	May 4	1 & 4 miles downstream
1	Salmon Trout Stream	" 20	Summer	1/4 mile downstream

Note: The fish planted Dec. 12 were old male trout; the balance were all yearling fish.

TABLE V

RECAPITULATION OF RECOVERED MARKED BROWN TROUT 1929

Number	Name of Stream	Date	Date	Distance traveled
25	10 Different streams and lakes	Dec. 5-10	May 1-Aug. 29	No Migrations whatever.

TABLE VI

RECAPITULATION OF RECOVERED MARKED RAINBOW TROUT 1929

RELEASES			RECAPTURES		
Stream and place	Date 1929	Length	Date 1929	Length	Miles traveled
Manistee R.over Junction Dam	Apr.18	--	July 21	--	None
" " " "	" 18	--	Aug. 27	--	None stre[illegible]
" " " "	" 17	23 "	May 27	24½"	15 miles up/
Manistee R.below Junction Dam	" 30	26	Aug. 23	26¾	1/2 mi.downstr[illegible]
" " " "	" 30	19	May 13	20	Ascended Pine Creek 6 mil[illegible]
" " " "	" 30	19	May 13	19	" " " " [illegible]
Pine Creek,Manistee County	" 21	--	July 17	--	Off Oostburg, Wisconsin
Little Manistee R. at Fox' Bridge	" 24	23	May 14	23½	2 Mi.Upstream
" " " "	" 24	26	May 30	27¾	8 " "
" " " "	" 24	18	July 17	19½	4 "downstream
" " " "	" 24	--	May 10	--	5 " "
" " " "	" 24	26	Aug. 12	26½	11 " "
" " " "	" 24	26	Aug. 4	26½	14 " "
" " " "	" 24	--	June 24	--	Off Kenosha,Wis.
" " " "	" 24	--	July 29	--	Two Harbor Pt.,"
" " " "	" 24	--	July 24	--	No.Manitou Isl.
" " " "	" 24	--	July 17	--	Off Oostburg,Wis.
Pine R.Over Stronach Dam	" 18	18	Aug. 20	21	½ mi.Upstream
" " " "	" 26	16	June 2	17	2½ Mi. "
" " " "	" 26	22	July 22	--	2½ " "
" " " "	" 26	20	May 20	20	6 " "
" " " "	" 26	--	June 1	--	9 " "
" " " "	" 26	22	May 29	22¼	11 " "
" " " "	" 18	18	May 2	18	14 " "
" " " "	" 18	19	May 19	20	17 " "
" " " "	" 18	18	May 19	18¾	17 " "
" " " "	" 18	19	May 22	19½	22 " "
" " " "	" 18	18	July 25	--	27 " "
" " " "	" 26	18	July 5	18½	30? " "
" " " "	" 18	19	Summer	20	32 " "
" " " "	" 18	18	May 10	--	33 " "
" " " "	" 19	19	June 8	20¾	40 " "
" " " "	" 26	2-sp	?		40 Pine R.in [illegible] Co
" " " "	" 26	22	July 2	22	Descended St[illegible]
" " " "	" 26	17	Aug. 20	18	"nach Dam "
" " " "	" 26	--	Aug. 15	--	" " & 5 mi
" " " "	" 26	--	Aug. 8	--	downstream