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December 3, 1957

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ANN ARBOR, MICHIGAN

Report No. 1532

PROGRESS REPORT ON TROUT FISHING IN THE SPECIAL-REGULATION WATERS
OF THE NORTH BRANCH OF THE AU SABLE RIVER, CRAWFORD AND
OTSEGO COUNTIES, MICHIGAN, 1950-1956

By David S. Shetter

Portions of the North Branch of the Au Sable River have been under special fishing regulations, established by the Conservation Commission, since the opening of the 1949 trout season. These regulations increased the minimum legal length on trout, restricted the lure to artificial flies only, and lowered the daily creel limit to 5 trout. Their objective is to provide the maximum in sporting opportunities, over a stock of wild trout, for the greatest possible number of anglers.

Since 1950 angling success has been followed through a partial creel census. Information on the trout population has been obtained from collections made with an AC electrofishing unit since 1948. We believe that the data from the creel census and the annual trout collections indicate year-to-year trends in angling and trout population.

From 1948 to 1952 shocker collections were made at only one station, located within the "special regulation" water; starting with the fall of 1953 yearly shocking was done at five sample sites in the special regulation water and at five sites in the water where usual regulations prevailed. To facilitate comparisons, sampling sites were chosen both in the experimental area and outside of it.

The present report is concerned with angling and fall population studies since 1950.

The special regulations which have been in effect since 1949 are outlined below.

Year	Area	Regulations		
		Legal length	Creel limit	Lure
1949	Crawford-Otsego county line to Lovells Bridge	10-inch minimum	10 trout	any lure
1950-1954	Crawford-Otsego county line to Eaman's Landing	10-inch minimum	10 trout but not more than 5 brook trout	flies only
1955	Crawford-Otsego county line to Eaman's Landing, also Kellogg's Bridge to mouth	10-inch minimum	5 trout	flies only
1956	Crawford-Otsego county line to mouth	9-inch minimum	5 trout	flies only

Ordinary trout fishing regulations (7-inch minimum length, 10 trout creel limit, any lure) have prevailed in the area between Dam 2 and the Crawford-Otsego county line (Fig. 1) since the start of the experiment in 1949. The area between Eaman's Landing and Kellogg's Bridge was under usual state-wide regulations from 1949 to 1955, inclusive. Angling records and shocker samples from these two areas provide data for comparison with the portions of the stream areas where special regulations were in effect. In 1956, application of special regulations to the entire North Branch in Crawford County somewhat disrupted the experiment because the mileage of stream under usual trout fishing regulations was reduced.

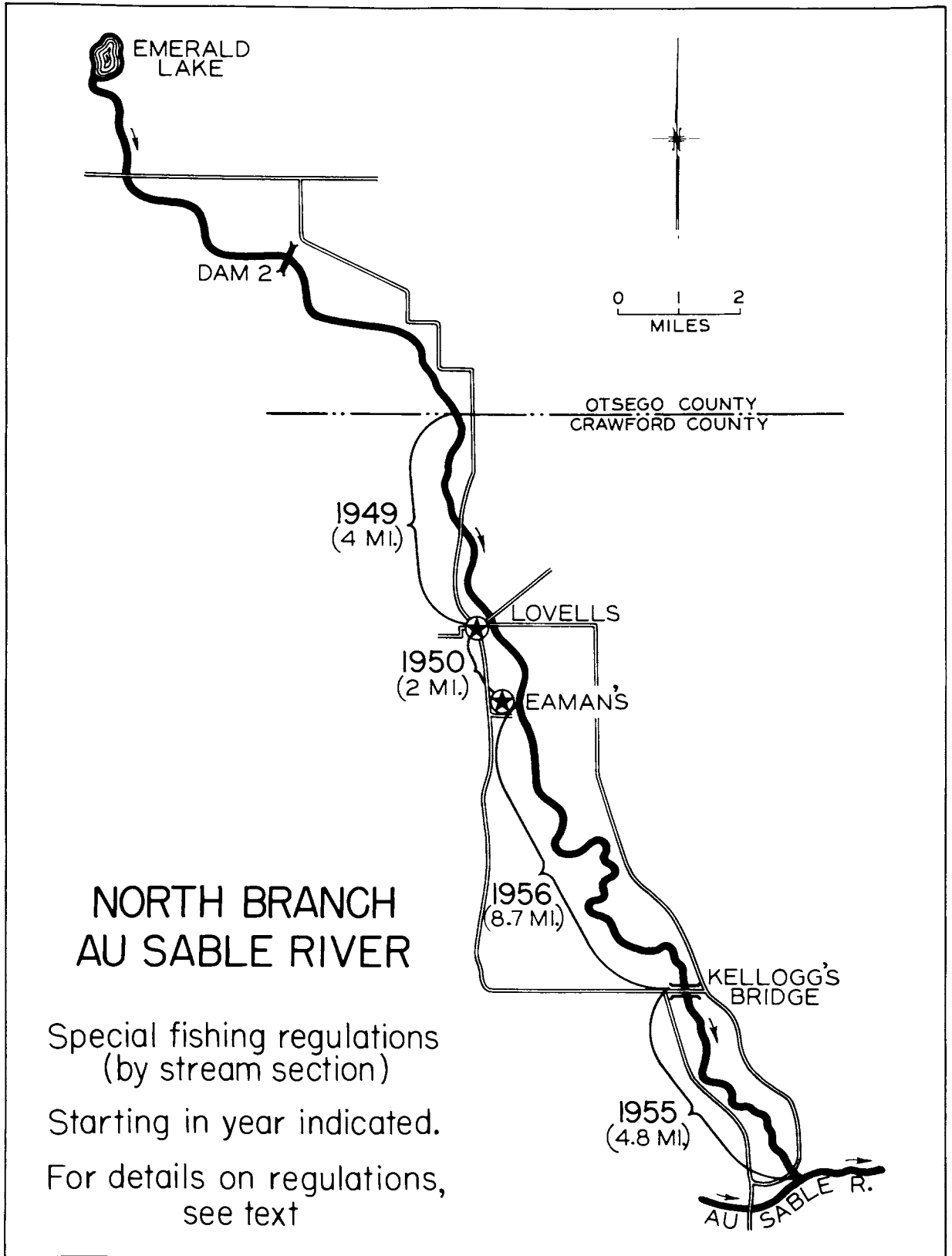


Figure 1

Creel census results

The more important statistics on the fishing, as determined from the partial creel census, are given in Table 1. Census records of an unknown fraction of the total fishing on both the "restricted" and "normal" waters were secured, but since equal effort was expended on both types of waters, it is assumed that the data provide a valid comparison of fishing quality. Each type of water was censused on a pre-arranged schedule, mostly on weekend days and holidays, and on an equal number of days each season.

The census clerk interviewed anglers at access points on the stream where their cars were parked. Seven such access points on each type of water were regularly checked. On a given day the clerk, traveling by car, repeatedly visited the seven access points on one type of water and obtained records from as many anglers as possible. If fishermen were using two or more sites, the clerk waited at that site where he could obtain the most interviews before proceeding to access points being used by fewer anglers. Records were obtained only for completed fishing trips, and included name of angler, county or state of residence, type of water fished, time spent fishing, measurements on fish taken, records of marked hatchery trout, etc. Scale samples from wild trout were collected for study of age and growth.

Comparison of yearly totals, from 1950 to 1955, of angling trips and hours of angling recorded by this partial census can be made from the data in Table 1. Fishing effort on the special regulation water, despite the comparatively stiff rules imposed, was about the same as on the normal water. This equal interest of fishermen in the restricted water is especially significant in view of the fact that the normal water from Eaman's Landing downstream was stocked with several thousand hatchery trout each year. The restricted water was not stocked.

Table 1.--Partial creel census statistics, restricted and normal waters, North Branch Au Sable River

Average length of trout in inches is given in parentheses under recorded catch

Type of water	Year	Angler trips	Total unsuccessful trips		Total hours of fishing	Recorded catch by species			Total catch recorded	Catch per hour, native trout
			Number	Percent		Wild brook	Hatchery brook	Wild brown		
Restricted water:	1950	404	362	90	1,056	23 (10.2)	...	50 (12.5)	73	0.07
	1951	530	451	85	1,606	36 (10.3)	...	76 (11.9)	112	0.07
County line to Eaman's Landing	1952	574	471	82	1,748	52 (10.4)	...	105 (12.5)	157	0.09
	1953	537	412	77	1,659	104 (10.3)	...	108 (13.0)	212	0.13
	1954	512	377	74	1,630	80 (10.5)	...	145 (13.7)	225	0.14
	1955	468	373	80	1,583	44 (10.4)	...	100 (12.8)	144	0.09
	1956*	441	342	78	1,290	69 (9.6)	...	82 (12.1)	151	0.12
Normal water: Eaman's Landing to Kellogg's Bridge plus Dam 2 to County line	1950	487	276	57	1,683	331	318 ¹ (7.7)	97 (9.0)	746	0.25
	1951	430	222	52	1,541	436	65 ¹ (7.5)	184 (8.4)	685	0.40
	1952	480	233	49	1,743	469	208 ¹ (7.7)	166 (8.7)	843	0.36
	1953	410	208	51	1,452	407	175 (7.7)	163 (9.1)	745	0.40
	1954	359	153	43	1,224	317	261 (7.8)	178 (9.7)	756	0.40
	1955	465	243	52	1,605	368	106 (7.6)	157 (8.8)	631	0.26
1956	see Table 3									

*Minimum size lowered from 10 inches to 9 inches on this area in this year.

¹Average size for both hatchery and wild brook trout.

Since 1950, the percentage of successful anglers in the restricted water has varied between 10 and 26 percent (see Table 1 for figures on percentage of unsuccessful fishermen). It was 10 percent in 1950 (the first census year and the second year of the restrictions) and it has been consistently above 15 percent since 1951. The difference between 10 percent (1950) and more than 15 percent (after 1951) was statistically significant (Chi-square, 95 percent confidence). In the normal water, in 1950-1955 the percentage of successful anglers ranged from 43 to 57. The higher percentage (than in restricted waters) was due partly to the capture of hatchery-reared trout, and partly to the lower size limit on wild fish.

The recorded catch of wild brook trout in the restricted area was 23 in 1950; it climbed to a peak of 104 in 1953, and dropped to 44 fish in 1955. In the restricted water the catch of brown trout followed a similar pattern: a low of 50 in 1950; a steady rise to 145 in 1954; and a drop to 100 in 1955. For the two species of trout combined, 1953 and 1954 were the peak years for number of fish recorded, and also in catch per hour of wild trout.

In the 7-inch, any-lure water yearly catches of wild brook trout varied from 317 to 469 in 1950-1955, while the annual catch of brown trout fluctuated between 97 and 184. From 65 to 318 hatchery brook trout were recorded in the various years. The catch per hour of wild trout was 0.25 in 1950, 0.36 to 0.40 in 1951-1954, and dropped to 0.26 in 1955. Better trout fishing during 1953-1954 was not so striking in the normal water as in the restricted water.

The average size of the trout creel (Table 1) in the restricted water has varied as follows: brook trout between 10.2 inches (1950) and 10.5 inches (1954): brown trout between 11.9 inches (1951) and 13.7 inches (1954). In the normal water wild brook trout averaged 7.6 to 7.8 inches (during the years when measurements on wild and hatchery fish were recorded separately); average length of brown trout ranged from 8.4 inches (1951) to 9.7 inches (1954). This difference in average

size of fish (especially brown trout) taken in the two types of waters made it possible for the restricted water to produce a comparable poundage of fish with a smaller numerical catch.

The estimated weight of the recorded catch is presented in Table 2. These estimates were computed from length-weight tables made up by Cooper (1949) for Michigan brook trout, and by Tody (1949) for North Branch brown trout. Individual fish (of measured length) listed on the creel cards were assigned weights from these length-weight tables. Brook trout caught from the restricted water had a total weight of 8.9 pounds in 1950; 44 pounds in 1953 and 18.8 pounds in 1955. Weight of brown trout from the restricted water reached a peak of 138 pounds in 1954 and dropped off in 1955. In the normal (7-inch) water, weight of wild brook and brown trout recorded by the census was more constant over the six years and was about equal to the weight of trout from the restricted waters. Brown trout made a much greater contribution (in weight) to the fishing in restricted water than in the 7-inch water.

Because this study is based on a partial census, with no estimate of total fishing effort, it is not possible to estimate total catch. From a comparative approach it is concluded that the restricted water produced about the same weight of trout in the creel (fewer but larger fish) as did the 7-inch water, starting about three years after the special regulations were put in effect. Angling success in the restricted water depended upon brown trout rather than brook trout.

As pointed out by Shetter, Whalls and Corbett (1954), to evaluate the special regulations (higher size limit, flies only) on the North Branch, one must consider abstract values as well as the catch of trout. Anglers have the fun of catching many sublegal trout (7" to 9") which they must release, and this is of real value, especially when highly prized large fish can be kept for the creel.

Table 2.--The estimated poundage of wild brook trout and wild brown trout recorded in the partial creel census, North Branch Au Sable River
Numbers of fish are given in parentheses

Year	Restricted water			Normal water		
	Wild brook	Wild brown	Total pounds of wild trout	Wild brook	Wild brown	Total pounds of wild trout
1950	8.85 (23)	35.54 (50)	44.39	62.59 (331)	27.36 (97)	89.95
1951	14.76 (36)	53.06 (76)	67.82	82.40 (436)	49.69 (184)	132.09
1952	22.10 (52)	80.08 (105)	102.18	88.64 (469)	51.56 (166)	140.20
1953	44.27 (104)	94.78 (108)	139.05	80.69 (407)	54.03 (163)	134.72
1954	34.64 (80)	138.17 (145)	172.81	65.57 (317)	66.56 (178)	132.13
1955	18.81 (44)	83.73 (100)	102.54	60.38 (368)	41.48 (157)	101.86

1956	23.14 (69)	59.84 (82)	82.98 ¹	22.97 (147)	11.64 (27)	34.61 ³
	6.25 (20)	8.27 (29)	14.52 ²			

¹Weight of catch in County Line-Eaman's Landing area under reduced size limit (10 inches to 9 inches).

²Weight of catch in Eaman's Landing-Kellogg's bridge area under an increase in size limit from 7 inches to 9 inches.

³Weight of catch in Otsego County area under normal regulations.

The changes in the special regulations beginning with the 1956 season, and the stream areas affected by them, necessitate a further breakdown of the creel census data for that year. The creel records for the area from the Otsego-Crawford County line to Eaman's Landing correspond to the original ten-inch, flies-only, five-trout water, and the only change here was the reduction of the minimum size limit to nine inches. From Eaman's Landing to Kellogg's Bridge, formerly fished under normal state-wide regulations, the minimum size limit was increased to 9 inches, only flies were permitted, and the daily limit was reduced to five trout. Only the Otsego County waters of the North Branch were continued under normal state-wide regulations.

In 1956, the amount of fishing in the County Line-Eaman's Landing area decreased slightly (Table 1), due mainly, it is suspected, to very cold weather in May and early June. The catch of brook trout rose slightly (from 44 in 1955 to 69 in 1956). The catch of brown trout declined slightly from 100 in 1955 to 82 in 1956.

The extension of restrictions to the Eaman's Landing-Kellogg's Bridge portion of the stream resulted in a reduction in fishing effort and in the catch of creelable trout (Table 3) from this portion of the stream. Before 1956, the creel census clerk was able to interview from 213 to 373 anglers here, but in 1956 he interviewed only 168 fishermen. This situation was not unexpected, inasmuch as there was considerably less chance for anglers to hook trout longer than 9 inches as compared to the waters upstream which had been under restrictions over a longer period of time. A total of 20 wild brook trout (average size, 9.4 inches) and 29 brown trout (average size, 9.7 inches) were recorded in 1956.

Some increase in angling pressure appears to have occurred during 1956 in the Otsego County waters of the North Branch (see Fig. 1), where the normal trout fishing regulations still are in effect (Table 3). Slight increases in the total catch of wild brook trout and wild brown trout were noted.

Table 3.--A breakdown of the partial creel census records for water areas outside the original restricted water

Average length of trout in inches is given in parentheses under recorded catch

Location of water	Year	Angler trips	Total unsuccessful trips	Total hours of fishing	Recorded catch by species			Total catch wild fish	Catch per hour wild trout
					Wild brook	Hatchery brook	Wild brown		
Eaman's Landing to Kellogg's Bridge	1950	213	97	899	205	318 (7.7)	81 (8.8)	286	0.32
	1951	275	155	954	204	65 (7.5)	127 (8.6)	331	0.35
	1952	320	165	1,169	220	208 (7.7)	102 (9.2)	322	0.28
	1953	279	146	1,004	220 (7.7)	175 (8.3)	127 (9.1)	347	0.35
	1954	278	117	964	197 (7.8)	261 (8.4)	152 (9.8)	349	0.36
	1955	373	204	1,276	234 (7.6)	106 (8.4)	137 (8.7)	371	0.29
	1956 ¹	168	135	556	20 (9.4)	...	29 (9.7)	49	0.09
Dam ² to Crawford-Otsego County line	1950	276	79	784	126 (7.6)	...	16 (8.4)	142	0.18
	1951	155	67	588	232 (7.5)	...	57 (8.3)	289	0.49
	1952	160	68	574	242 (7.6)	...	64 (8.8)	306	0.53
	1953	131	62	447	187 (7.7)	...	36 (9.1)	223	0.46
	1954	81	36	259	120 (7.8)	...	26 (10.1)	146	0.56
	1955	92	39	329	134 (7.7)	...	20 (9.1)	154	0.47
	1956	129	79	408	147 (7.6)	...	27 (9.7)	174	0.43

¹Restrictions (9-inch minimum size, flies only, 5 trout per day) applied on this area in 1956.

²Normal state-wide regulations in force in this area.

The change in regulations and the lowered angling pressure sharply reduced the estimated weight of the trout observed in the creels. From the County Line-Eaman's Landing area a total of 83 pounds of fish (brook trout, 23 pounds; brown trout, 60 pounds) were taken. From Eaman's Landing to Kellogg's Bridge, the trout taken were estimated to weigh 14.5 pounds (6.25 pounds of brook trout, 8.27 pounds of brown trout). The Otsego County waters yielded 23 pounds of brook trout and 12 pounds of brown trout, or a total of 35 pounds. Prior to 1956 when usual trout fishing regulations applied to the portions of the stream in Otsego County and between Eaman's Landing and Kellogg's Bridge the observed yield had been from 90 to 140 pounds but in 1956 the yield dropped to 49 pounds, primarily because of the reduced catch in the Eaman's Landing-Kellogg's Bridge area.

Age of trout in anglers' catch

To assess age composition of the trout in the anglers' catch scale samples were secured from as many trout as possible each year. Scales were obtained from trout of legal length caught in all parts of the stream, and also from some sublegal trout which were noted in anglers' creels. Age analyses for wild brook trout are given in Table 4. In yearly summaries for 1950-1955, brook trout from the restricted water (with 10-inch size limit) were mostly in their third summer of life (48-97 percent), while from the normal water (7-inch size limit) most (45-82 percent) of the fish were in their second summer of life.

When the size limit was reduced to 9 inches in 1956, the majority of fish in the catch still consisted of fish in their third summer, but more second-summer fish were noted in the creels. In 1956, as in prior years, most of the brook trout caught in the Otsego County 7-inch water were second-summer fish.

Brown trout scales were not collected from angler-caught fish prior to 1953, but a good series has been obtained since then, especially from the

Table 4.--Age composition of angler-caught brook trout, North Branch
of the Au Sable River

Year	Age group	Restricted water			Normal water		
		Number	Size range (inches)	Percentage in sample	Number	Size range (inches)	Percentage in sample
1950	I	...	...	...	33	7.0 - 8.7	45
	II	36	9.6 - 10.5	97	39	7.0 - 9.6	53
	III	<u>1</u>	11.5	3	<u>2</u>	9.3 - 9.6	2
	Total	37			74		
1951	I	...	...	...	268	6.7 - 8.9	82
	II	35	9.7 - 11.0	74	60	7.0 - 10.1	18
	III	<u>12</u>	10.0 - 11.5	26	...	...	...
	Total	47			328		
1952	I	1	10.0	1	264	6.5 - 8.8	76
	II	65	9.7 - 11.6	88	80	7.1 - 10.2	23
	III	<u>8</u>	10.3 - 14.0	11	<u>5</u>	7.6 - 11.4	1
	Total	74			349		
1953	I	...	...	...	165	6.8 - 8.8	73
	II	102	9.0 - 11.5	70	54	7.4 - 11.9	24
	III	42	8.8 - 12.2	29	8	8.6 - 11.4	3
	IV	<u>1</u>	11.6	1	...	...	..
	Total	145			227		
1954	I	...	...	...	113	7.0 - 9.3	54
	II	59	10.0 - 11.2	70	89	6.7 - 10.8	43
	III	<u>26</u>	10.0 - 13.7	30	<u>7</u>	10.0 - 12.4	3
	Total	85			209		
1955	I	...	...	...	146	6.5 - 9.2	62
	II	22	9.7 - 10.6	48	85	7.0 - 10.0	36
	III	21	9.8 - 11.7	45	5	8.8 - 9.7	2
	IV	<u>3</u>	10.6 - 12.0	7	...	...	..
	Total	46			236		
1956	↓ I	10	7.1 - 9.5	12	↘ 76	6.7 - 8.8	70
	II	62	7.5 - 11.8	73	32	7.0 - 9.4	29
	III	12	9.1 - 11.0	14	1	9.9	1
	IV	<u>1</u>	11.2	1	...	...	..
	Total	85			109		
	↘ I	1	7.5	4			
	II	24	8.8 - 9.9	96			
	III	...	...	...
	Total	25					

↓ Sample from County Line-Eaman's Landing.

↘ Sample from Eaman's Landing-Kellogg's Bridge.

↗ Sample from Otsego County waters.

restricted water (Table 5). As among the brook trout, almost no second-summer brown trout were taken by anglers where the minimum size limit was ten inches; the catch consisted mostly of fish in their third and fourth summers. Many brown trout in the 10-inch water were much older (up to nine summers in age) than brook trout. Most brown trout caught in the 7-inch waters were two to three summers in age, and none older than six summers was noted. The change in size limit to 9 inches in 1956 did not appear to change the age composition of the brown trout catch, except in the Eaman's Landing-Kellogg's Bridge area where no second-summer fish were observed among the few fish creeled.

Electrofishing indices of the population density

The pertinent statistics of the annual AC shocker collections are summarized in Table 6. For the years 1948 through 1952 a single collection was made at Twin Bridges. From 1953 through 1956 the data represent the total collections in the restricted water from four other sites (Eaman's upstream, Gravel Pit, Blanchards, Black Hole) plus Twin Bridges. The normal water was sampled at five sites for comparison (Kantagree Club, Dam 4, Eaman's downstream, Boutell's, Dam 2).

Analysis of the electrofishing data is difficult because we lack information on the variation in collecting efficiency that occurs under different water levels and electrical conductivities of the water. Also, except for the Twin Bridges site, we do not have collections before and after the application of the restrictions.

For brook trout the available data suggest an increase in numbers among all size groups of the population after the restrictions were put in operation in 1949. A relatively high plateau was reached in 1951, 1952 and 1953. Since that time numbers of fish larger than 5 inches have declined to almost the pre-restriction level. Fingerlings (0-4.9-inch group) still appear to be over 60 percent more numerous than in 1948.

Table 5.--Age composition of angler-caught brown trout, North Branch
of the Au Sable River

Year	Age group	Restricted water			Normal water		
		Number	Size range (inches)	Percentage in sample	Number	Size range (inches)	Percentage in sample
1953	I	...	...	...	47	7.0 - 9.5	81
	II	30	9.7 - 12.6	56	7	9.4 - 13.3	12
	III	14	11.4 - 15.2	26	4	12.1 - 14.5	7
	IV	5	12.5 - 17.5	9	...	...	...
	V	2	19.6 - 20.0	4	...	...	...
	VI	2	17.8 - 21.9	4	...	...	...
	VII	<u>1</u>	22.2	1	<u>...</u>	...	...
		54		58			
1954	I	1	10.2	1	...	...	...
	II	23	10.0 - 13.5	43	...	...	...
	III	20	10.9 - 18.1	38	...	...	...
	IV	4	12.0 - 18.1	8	1	15.9	100
	V	1	21.2	2	...	...	...
	VI	2	18.5 - 20.5	4	...	...	...
	VII	...	...	...	...	...	...
	VIII	<u>2</u>	21.6 - 22.3	4	<u>...</u>	...	...
		53		1			
1955	I	...	...	...	24	7.0 - 8.9	47
	II	37	10.0 - 13.0	54	21	8.0 - 12.7	41
	III	24	10.9 - 16.6	35	5	12.0 - 15.3	10
	IV	7	14.0 - 20.0	10	...	...	...
	V	<u>1</u>	19.1	1	<u>1</u>	20.3	2
		69		51			
1956	1 I	2	9.5 - 9.9	2	3 9	7.5 - 8.4	45
	II	47	9.0 - 13.0	57	8	8.7 - 12.7	40
	III	21	10.1 - 17.3	25	2	13.1 - 14.8	10
	IV	7	13.0 - 18.9	9	...	...	...
	V	5	17.6 - 20.5	6	1	18.0	5
	VI	<u>1</u>	18.0	1	<u>...</u>	...	...
			83		20		
	2 I	...	...	...	...	...	...
	II	12	9.0 - 11.5	80	...	...	...
	III	<u>3</u>	11.6 - 12.2	20	...	...	...
			15				

1 Sample from County Line-Eaman's Landing.

2 Sample from Eaman's Landing-Kellogg's Bridge.

3 Sample from Otsego County waters.

Table 6.--Numbers of brook trout and brown trout in annual fall AC shocker samples and minutes of shocking time, North Branch Au Sable River

Estimated catches per hour are given in parentheses

Item	Size range (inches)	Year and type of angling regulation ¹ where sample was taken													
		1948	1949	1950	1951	1952	1953		1954		1955		1956		
		N	S	S	S	S	N	S	N	S	N	S	N	S	S1
Brook trout	0.0 - 4.9	135 (67)	54 (81)	65 (89)	...	...	165 (67)	291 (121)	227 (68)	226 (73)	190 (55)	359 (109)	80 (67)	365 (105)	200 (97)
	5.0 - 7.9	87 (44)	55 (83)	57 (77)	42 (110)	94 (148)	62 (25)	143 (60)	48 (14)	64 (21)	60 (18)	97 (30)	66 (55)	86 (25)	45 (22)
	8.0 - 13.9	8 (4)	48 (72)	38 (52)	87 (227)	73 (116)	4 (2)	84 (35)	5 (2)	63 (20)	4 (1)	25 (8)	5 (4)	28 (8)	15 (7)
Total		230 (115)	157 (236)	160 (218)	129	167	231 (94)	518 (216)	280 (84)	353 (114)	254 (74)	481 (147)	151 (126)	479 (138)	260 (128)
Minutes spent shocking		120	40	44	23	38	148	144	201	186	206	197	72	209	122
Brown trout	0.0 - 5.9	...	...	...	...	...	120 (49)	36 (15)	174 (51)	31 (10)	157 (45)	79 (24)	48 (40)	89 (26)	119 (59)
	6.0 - 11.9	...	...	...	...	...	94 (38)	47 (20)	77 (23)	55 (18)	79 (23)	76 (23)	50 (42)	80 (24)	93 (45)
	12.0 - 16.9	...	...	...	...	...	27 (11)	30 (12)	26 (8)	26 (8)	11 (3)	22 (7)	12 (10)	20 (6)	7 (3)
	17.0 - 21.9	...	...	...	...	...	0	0	2 (1)	4 (1)	1 (1)	4 (1)	0	13 (4)	1 (1)
Total		...	...	...	...	...	241 (98)	113 (47)	279 (83)	116 (37)	248 (72)	181 (55)	110 (92)	202 (58)	220 (108)

¹N = Water fished under normal state regulations.
 S = Water fished under restrictions in force that year.
 S1 = Water fished under restrictions for first time in 1956 (Eaman's-Kellogg's Bridge area).

Since the expansion of the sampling program in 1953, the available figures indicate that the restricted water has carried, in the fall of the year after the angling season, from two to four times more brook trout than brown trout. Sampling in the normal waters suggests that the two species are about equal in numbers in that area.

Collections made by AC shocker in the normal waters suggested a downward trend in the populations of brook trout and brown trout, followed by a rise in 1956. The apparent increase in 1956 presumably resulted from a change in regulations which forced anglers to release numerous 7- to 9-inch trout.

For the years since 1953 when the brown trout captured have been recorded, the population indices for this species have been relatively stable in both types of water. In the normal waters from 72 to 98 brown trout were collected per hour of shocking, while in the restricted water, one hour of shocking yielded 37 to 58 fish. The normal waters have consistently carried more fingerling brown trout.

Discussion

The special restrictions that have been in force appear to have accomplished their objective in that more large brook trout and brown trout (wild fish) are now taken by anglers than under a 7-inch, any-lure regulation. The larger size of these trout has compensated for smaller numbers in the creel, so that total weight of trout in the creel is about the same. Also, many North Branch anglers have expressed satisfaction derived from the extra sport of catching and releasing more 7- to 9-inch trout.

The apparent decrease, during recent years, of the sublegal, two-summer-old brook trout in the fall shocker samples suggests a possible increase in the total

mortality rate for this group of fish. It is this group which is presumably protected to a large degree, by the fly regulation, from hooking mortality. Should this group continue at a low level, consideration should be given to keeping the size limit at 9 inches, or possibly lowering it to 8 inches, for a further study of the relationship between size limit and angler harvest.

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