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VOLUNTEER AND RANDOM CREEL CENSUS RESULTS, 1948

AU SABLE DRAINAGE

By

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The volunteer creel census of the Au Sable drainage was operated for the fourth consecutive year during 1948 through the cooperation of 17 volunteer recorders. These individuals tallied their personal fishing results and also those of their guests or clients on various parts of the Au Sable drainage. Records were kept on mimeographed sheets furnished by the Fish Division and were mailed in at the end of each month of the fishing season. These fishing records are from the following parts of the Au Sable drainage: Main Stream above the mouth of the North Branch of the Au Sable and for the Main Stream between Mio Dam and McKinley Bridge, South Branch, North Branch and East Branch of the Au Sable, and Big Creek (Crawford County). In the Mio-McKinley Bridge area, random creel census also was taken on alternate Saturdays and Sundays during the trout season by a Department employee. These data on the fishing, while they constitute an unknown sample of the total fishing on any stream, provide a general picture of the trends in the fishing, and give some indication of the proportion of hatchery-raised trout in the catch.

The totals for all volunteer records from all parts of the Au Sable drainage are presented in Table 1, where the data are broken down by individual streams.

#### All Fishing

In comparison with the census results noted in previous years, there were considerably fewer records turned in (1,095 angling days in 1948, 2,379 in 1947, 4,564 in 1946). A total of 3,643 adult trout were taken in 3,811.5 hours of angling, or 0.96 trout per hour of fishing-- the same angling quality index found for 1947. Of the total angling days recorded, 273, or 24.9 percent were unsuccessful. Brown trout were most numerous in the catches of the Main Au Sable and the South Branch, while brook trout dominated in the creel reports from the North Branch, East Branch, and Big Creek. The relatively few rainbow trout listed were taken mostly from the Main Stream.

On the Main Stream above the mouth of the South Branch, 211 days of angling yielded a total of 732 adult trout in 617 hours of effort or 1.19 fish per hour. Of the total catch, 245 were fin-clipped hatchery-reared trout, or 33.5 percent. Records from 20 days of angling on the East Branch for a total of 48 hours showed a total catch of 86 creel-size trout, or 1.79 fish per hour. Of these, 59 were marked hatchery trout, or 68.8 percent. It is doubtful if these records provide adequate data on which to judge the East Branch angling. North Branch angling records for 571 days of fishing listed a total catch of 2,180 brook and brown trout in 2,392.5 hours, or 0.91 fish per hour. The 206 marked hatchery fish tallied there constituted 9.4 percent of the total catch. On the South Branch 123 hours of angling on 38 fishing

Table 1. Summary of volunteer creel census reports by streams and stream areas, Au Sable drainage, 1948 trout season, for all fishing.

Stream	Total angling days reported <sup>1</sup>	Total hours of fishing reported	Marked trout taken <sup>2</sup>			Unmarked trout taken			Total catch of trout	Catch per hour
			Brook trout	Brown trout	Rainbow trout	Brook trout	Brown trout	Rainbow trout		
Main Stream (upper)	211 (41)	617.0	11 (11-0-0)	168 (157-10-1)	66 (66-0-0)	63	384	40	732	1.19
Main Stream (Mio area)	206 (79)	459.5	1 (1-0-0)	147 (122-21-4)	6 (4-1-1)	13	112	7	286	0.62
East Branch	20 (2)	48.0	52 (52-0-0)	3 (1-2-0)	4 (4-0-0)	9	13	5	86	1.79
North Branch	571 (140)	2,392.5	205 (205-0-0)	1 (1-0-0)	...	1,094	880	...	2,180	0.91
South Branch	38 (7)	123.0	2 (2-0-0)	53 (53-0-0)	16 (16-0-0)	9	41	4	125	1.02
Big Creek (Crawford County)	49 (4)	172.0	69 (69-0-0)	...	...	105	60	...	234	1.36
Totals	1,095 (273)	3,811.5	340 (340-0-0)	372 (334-33-5)	92 (90-1-1)	1,293	1,490	56	3,643	0.96

<sup>1</sup> Figures in parentheses give numbers of anglers taking no legal trout.  
<sup>2</sup> Figures in parentheses give the numbers of hatchery-reared trout from the 1948, 1947 and 1946 plantings in that order.

days yielded 125 adult trout for a catch per hour of 1.02 fish.

The 71 marked hatchery-reared trout removed made up 56.8 percent of the total catch. From Big Creek, tributary to the North Branch, records for 49 days of angling showed a total catch of 234 adult trout for 172.0 hours of effort, or 1.36 fish per hour. Hatchery-reared trout listed amounted to 69 brook trout, or 25.2 percent of the recorded catch. In the Main Stream between Mio Dam and McKinley Bridge, 459.5 hours of fishing during 206 days of angling produced 286 "keeper" trout for a catch per hour of 0.62 fish. In this area 154, or 53.8 percent of the total catch were marked hatchery-reared trout.

For all records combined, the 804 marked hatchery-reared trout listed (340 brook trout, 372 brown trout, 92 rainbow trout) made up 22.1 percent of the total catch, wild unmarked trout made up 77.9 percent of the total catch.

#### Night Fishing

As in the previous three years, the results of fishing after dark were tabulated separately by the recorders (Table 2). Night fishing on the Au Sable drainage in 1948 was listed for 102 occasions, of which 45, or 44.1 percent were unproductive trips. A total of 111 adult trout were captured in 261.0 hours of fishing after dark, or 0.43 fish per hour. Marked hatchery-reared trout made up 32.4 percent of the total catch of the after-dark anglers (36/111). As might be expected, over 75 percent of the catch by night fishermen consisted of brown trout.

The figures reported by the volunteer recorders continue to indicate that the night fishermen are not removing a disproportionate

Table 2. Summary of the results of night fishing on the various parts of the Au Sable drainage, 1948 trout season, volunteer creel census.

Stream	Total nights of angling reported <sup>1</sup>	Total hours of night fishing	Marked trout caught <sup>2</sup>			Unmarked trout caught			Total trout catch	Catch per hour
			Brook trout	Brown trout	Rainbow trout	Brook trout	Brown trout	Rainbow trout		
Main Stream (upper)	22 (8)	55.0	...	5 (4-1-0)	3 (3-0-0)	...	13	1	22	0.40
Main Stream (Mio area)	13 (1)	23.0	...	15 (15-0-0)	...	2	3	...	20	0.87
East Branch	5 (1)	12.0	1 (1-0-0)	1 (1-0-0)	...	...	9	1	12	1.00
North Branch	52 (34)	148.0	1 (1-0-0)	...	...	3	34	...	38	0.26
South Branch	10 (1)	23.0	...	7 (7-0-0)	3 (3-0-0)	2	4	3	19	0.83
Totals	102 (45)	261.0	2 (2-0-0)	28 (27-1-0)	6 (6-0-0)	7	63	5	111	0.43

<sup>1</sup> Figures in parentheses give numbers of anglers taking no legal trout.  
<sup>2</sup> Figures in parentheses give the numbers of hatchery-reared trout from the 1948, 1947 and 1946 plantings in that order.

share of the catch. In 1948, night-time angling hours constituted 6.8 percent of the total recorded (  $\frac{261.0}{3,811.5}$  ), yet the catch after dark was only 3.0 percent of the recorded total catch (  $\frac{111}{3,683}$  ). On all streams, except the Main Au Sable between Mio Dam and McKinley Bridge, the catch per hour after dark was noticeably less than the catch per hour for all fishing listed. This same general situation was noted in the data contained in the earlier volunteer reports.

Percentage of Hatchery-Reared Fish in Total Catch (Table 3)

During 1946, 1947, and 1948, all hatchery-reared trout released in the Au Sable drainage were marked by clipping certain fins in each year; the right pectoral fin in 1946, the dorsal fin in 1947, and the adipose fin in 1948. Thus in those years, all hatchery trout of the current year's planting were distinguishable, and in 1947 and 1948, survivors from plantings of earlier years were also recognizable in the catch.

In Table 3, the total catch of each species and kind (hatchery-reared or wild) and the percentage of the total catch made up by each species and kind is given. It is interesting to note that, despite the considerable range in the total catches during the three years, the percentage of hatchery-reared and wild trout in the creels listed by the volunteer recorders has been relatively constant.

During 1948, the wild fish made up the following parts of the total catch:

Brook trout-	- - - - -	35.5 percent
Brown trout-	- - - - -	40.9 percent
Rainbow trout-	- - - - -	1.5 percent

Table 3. The percentage of wild and hatchery-reared fish in the recorded catches of the volunteer cooperators of the Au Sable drainage, 1946-1948 inclusive.

Item		1946		1947		1948	
		Wild	Hatchery	Wild	Hatchery	Wild	Hatchery
Brook trout	Number	5,049	1,240	1,698	1,114	1,293	340
	Percent	26.9	6.6	21.3	14.0	35.5	9.3
Brown trout	Number	7,124	2,626	3,418	838	1,490	372
	Percent	37.9	14.0	42.9	10.5	40.9	10.2
Rainbow trout	Number	1,445	1,287	641	265	56	92
	Percent	7.7	6.9	8.0	3.3	1.5	2.5
All trout	Number	13,618	5,153	5,757	2,217	2,839	804
	Percent	72.5	27.5	72.2	27.8	77.9	22.1
Total catch	Number	18,771		7,974		3,643	
	Percent	(100.0)		(100.0)		(100.0)	

Hatchery-reared fish entered into the total catch as follows:

Brook trout-	- - - - -	9.3 percent
Brown trout-	- - - - -	10.2 percent
Rainbow trout-	- - - - -	2.5 percent

Similar data for the previous two years are provided for comparison (Table 3).

The numbers of planted trout surviving from one season to the next are of interest, as some anglers still believe the carryover to be of significant proportions. During 1948, all of the 340 hatchery brook trout reported by the volunteer census were adipose-marked fish released in 1948. Of the 372 marked brown trout recorded, the distribution was as follows: 334 were adipose-clipped fish of the 1948 planting (89.7 percent of all marked brown trout recovered), 33 were survivors from the 1947 plantings and were dorsal-clipped (9.0 percent of the brown trout recovered), and 5 were right-pectoral-clipped brown trout from the 1946 plantings (1.3 percent of all marked brown trout recorded). Of the total brown trout catch, fish planted prior to 1948 constituted 2.04 percent.

Of the 92 marked rainbow trout of hatchery origin recorded in the volunteer census, 90, or 98.8 percent of the total catch of marked fish, were released in 1948, and one survivor was noted from each of the two previous seasons' plantings (0.6 percent of all marked rainbow trout listed). Volunteer creel census records confirm earlier more intensive experimental results which showed that there is little carryover of planted trout to the following seasons and that of the three species only brown trout survive in any appreciable numbers. As in other studies here and in other states having good trout streams, the great majority of the anglers' catch is of wild fish.



Random Creel Census Results, Mio Dam to McKinley Bridge

During the 1948 trout season, Mr. Henry J. Vondett of the Hunt Creek Experiment Station staff spent from 8 to 12 hours on the Main Au Sable between Mio and McKinley Bridge on alternate Saturdays and Sundays. He contacted as many anglers as possible at the numerous fishing sites, and recorded the results of their fishing efforts. He cruised this stretch of stream by truck on the road lying on the north side of the river, and usually covered it twice each time he visited the stream. The data collected by Vondett are summarized in Table 4.

On the 21 weekend days that Vondett visited this stream area, a total of 338 anglers were contacted, of which 208, or 62.5 percent had caught no trout. The total catch of these anglers was 227 adult trout, consisting of 29 brook trout, 165 brown trout and 33 rainbow trout which were removed during 1,521.75 hours of fishing, or 0.15 trout per hour of angling effort.

Because all hatchery-reared trout released in the Au Sable River have been marked during the past three years, the composition of the observed catch was determined. Of the 29 brook trout taken, 28 (or 96.5 percent) were wild unmarked fish, and 1 brook trout was a dorsal-marked survivor of the 1947 hatchery releases. The majority of these brook trout seem to be taken in the vicinity of the mouths of the tributary streams, such as Comins Creek and Perry Creek. The wild brook trout constituted 12.3 percent of the total catch, artificially reared brook trout 0.4 percent.

The 17 wild rainbow trout bearing no marks made up 51.5 percent of the catch of rainbow trout, 2 adipose-marked fish (6.1 percent).

Table 4. Random creel census results, Main Au Sable River, Mio Dam to McKinley Bridge, 1948 trout season.  
(Numbers in parentheses indicate numbers of anglers taking no legal trout).

a = adipose mark, 1948; d = dorsal mark, 1947; rp = right pectoral mark, 1946; W = wild.

Date 1948	Total number of anglers	Total hours of angling	Total trout caught												Total catch	Catch per hour	
			Brook trout				Rainbow trout				Brown trout						
			W	a	d	rp	W	a	d	rp	Tagged	W	a	d	rp		
April 24	37 (24)	117.25	...	...	1	...	...	...	6	1	...	5	...	1	1	15	0.13
May 2	13 (12)	30.00	...	...	...	...	1	...	1	...	...	...	...	...	...	2	0.07
May 8	20 (18)	84.25	1	...	...	...	...	...	...	...	...	1	...	...	...	2	0.02
May 16	15 (11)	47.50	1	...	...	...	1	1	...	...	...	...	1	...	...	4	0.08
May 22	32 (11)	222.25	4	...	...	...	1	...	1	...	8	7	14	...	...	35	0.16
May 30	34 (28)	123.00	2	...	...	...	...	...	1	...	...	1	3	...	...	7	0.06
June 5	17 (6)	114.50	7	...	...	...	2	...	...	...	2	2	12	...	...	25	0.22
June 13	11 (5)	29.25	...	...	...	...	...	...	1	...	3	1	2	...	...	7	0.24
June 19	13 (4)	49.50	4	...	...	...	5	...	...	...	3	1	4	...	...	17	0.34
June 27	14 (10)	69.50	...	...	...	...	...	...	...	...	1	...	8	1	...	10	0.14
July 3	16 (8)	100.50	2	...	...	...	1	...	2	...	1	2	7	...	...	15	0.15
July 11	10 (6)	41.50	1	...	...	...	...	...	...	...	3	...	6	...	...	10	0.24
July 17	8 (7)	44.00	...	...	...	...	...	...	...	...	...	2	...	...	...	2	0.05
July 25	14 (9)	52.75	1	...	...	...	...	...	...	...	...	5	4	...	...	10	0.19
July 30	9 (5)	64.00	1	...	...	...	2	...	1	...	2	...	4	...	...	10	0.16
August 8	10 (9)	28.75	...	...	...	...	...	...	...	...	...	...	1	...	...	1	0.03
August 14	12 (4)	49.00	...	...	...	...	...	...	...	...	1	2	8	...	...	11	0.22
August 22	12 (5)	64.75	...	...	...	...	...	...	...	...	3	...	19	...	...	22	0.34
August 28	3 (3)	7.00	...	...	...	...	...	...	...	...	...	...	...	...	...	0	0.00
Sept. 5	25 (18)	137.00	2	...	...	...	2	...	...	...	...	...	4	...	...	8	0.06
Sept. 11	13 (5)	45.50	2	...	...	...	2	1	...	...	...	...	9	...	...	14	0.31
Totals	338 (208)	1,521.75	28	...	1	...	17	2	13	1	27	29	106	2	1	227	0.15
Average size in inches			8.4	...	11.0	...	13.1	9.3	12.9	18.3	10.2	12.8	10.2	14.7	15.0	...	...
Number of specimens measured			18	...	1	...	12	2	12	1	27	23	102	2	1	...	...

13 dorsal-marked specimens (39.4 percent) and 1 right-pectoral-marked survivor of the 1946 planting (3.0 percent) also were caught. Thus hatchery-reared rainbow trout constituted 48.5 percent of the rainbow trout catch. Wild rainbow trout made up 7.5 percent of all trout caught; hatchery-reared rainbow trout 7.0 percent.

Of the 165 brown trout caught, 29, or 17.6 percent, were wild unmarked fish. Survivors from the hatchery plantings in the current year and preceding two years were as follows: 1948 plantings--tagged fish (27) and adipose-clipped fish (106), 133, or 80.6 percent; 1947 plantings--dorsal-clipped fish, 2, or 1.2 percent; 1946 plantings--right-pectoral-clipped fish, 1, or 0.6 percent. Wild brown trout constituted 12.8 percent of the total observed catch, while hatchery brown trout made up 59.9 percent of all trout removed. Thus of all trout observed in the creels, 74, or 32.6 percent were wild fish, while 153, or 67.4 percent came from hatchery releases.

As will be noted in Table 4, length measurements were taken on the majority of the fish captured by the anglers interviewed. The weights were not similarly available because about half of the trout were dressed. The average total lengths of the various types and species of trout were as follows:

Wild brook trout--8.4 inches (18 fish)  
Dorsal-clipped brook trout--11.0 inches (1 fish)  
Wild rainbow trout--13.1 inches (12 fish)  
Adipose-clipped rainbow trout--9.3 inches (2 fish)  
Dorsal-clipped rainbow trout--12.9 inches (12 fish)  
Right-pectoral-clipped rainbow trout--18.3 inches (1 fish)  
Wild brown trout--12.8 inches (23 fish)  
Adipose-clipped brown trout--10.2 inches (102 fish)  
Tagged brown trout--10.2 inches (27 fish)  
Dorsal-clipped brown trout--14.7 inches (2 fish)  
Right-pectoral-clipped brown trout--15.0 inches (1 fish)

For brown trout and rainbow trout, the plantings of the current year were of smaller average size than the average size of the wild fish. No hatchery fish of the current year were recovered among the brook trout. Survivors from 1947 and 1948 plantings of brown and rainbow trout, however, approached the average size of wild fish or were of larger average size than the wild fish.

Comparison of results obtained by the two different methods of creel census on the Main Stream below Mio reveals that the volunteer operators were either better fishermen or that weekend fishing was not as good as during midweek. It is suspected that both factors entered into the picture. The weekend random census conducted by Vondett included fishermen with all levels of skill and equipment-- from chalk-line anglers at Mio Bridge to the most expert of dry-fly addicts, many of whom did not know the river well. The volunteer recorders were local anglers who knew when, where and how to fish. Another factor that undoubtedly caused some of the variance in angling quality between the two censuses was the mode of operation of the turbines at the Mio Dam. During the week the turbines were shut off most of the time, while on weekends there were one or two wheels operating. This means that the random census is a record of high-water angling, while the bulk of the volunteer records were for fishing during the week on low water.

Despite the variance in angling quality and total catch, some similarity in the composition of the catch of the various species can be noted. In both censuses, almost all brook trout taken were wild fish. In both censuses, slightly more than half the rainbow trout

taken were wild fish. In both censuses, hatchery-reared brown trout constituted between 50 and 60 percent of the total catch. The greatest point of difference was in the numbers of wild brown trout taken; over three times as many were listed by the volunteer recorders as during the weekend census, possibly because of the combination of factors such as low water during midweek, stream knowledge, better fishing skill, and because the volunteers were close to the river and fished when the brown trout were "on the feed." Another point of difference was the proportion of dorsal-clipped brown and rainbow trout in the recorded catches of the two censuses. Only 1 of 6 hatchery-raised rainbow trout was a carryover from 1947 in the volunteer census, whereas 13 of 33 dorsal-marked survivors were observed on the weekend checks. Among the hatchery brown trout, only 2 of 136 hatchery fish were dorsal-clipped in the random census, yet 21 dorsal-clipped fish out of a total catch of 147 brown trout were reported by the volunteer operators.

As noted in the other parts of the Au Sable drainage, the plantings of the current year contributed the most fish to the anglers' creel. Based on the two sets of data available for the Mio-McKinley Bridge area, hatchery-reared trout contributed the following percentages of the total recorded catches of 1948:

Volunteer Census --	1948 plantings,	44.4 percent
	1947 plantings,	7.6 percent
	1946 plantings,	1.7 percent
Random Census -----	1948 plantings,	59.4 percent
	1947 plantings,	7.0 percent
	1946 plantings,	0.9 percent

Both types of census indicated there was a higher percentage of carryover of hatchery plantings from one and two years earlier in the

Mio-McKinley Bridge area than elsewhere in the Au Sable system. Approximately 7 to 8 percent of the total catch had survived from the previous year's planting, and from 1 to 2 percent carried over from plantings two years earlier. In contrast, survival of earlier plantings in the various upper reaches of the Au Sable drainage did not exceed 1.4 percent of the observed 1948 catch.

It is probably a safe conclusion that this part of the Au Sable system affords unusually favorable conditions for over-winter survival of brown and rainbow trout.

#### Tagged Brown Trout in the Catches of the Main Au Sable River, Mio-McKinley Bridge Area

To obtain further information on the proper time of year to release hatchery-reared brown trout of adult size so that the maximum recovery is made by the angling public over the longest period of time, a series of plantings, in which all fish were jaw-tagged, was carried out in November, 1947, April, 1948, May, 1948, and June, 1948. In each of those months approximately 1,000 tagged fish were scattered from the numerous landings between Mio Dam and McKinley Bridge--a stream distance of approximately 15 miles. The fish released were all 7 inches long or longer.

Although the experiment will not be complete until the end of the 1949 or 1950 trout season, a comparison of the number of recoveries reported by the two types of censuses is of interest. Only one tagged brown trout, an individual from the April, 1948, planting was reported by the volunteer recorders in the Mio area, whereas 27 recoveries were observed by Vondett in the course of the season on his weekly checks.

Of these, 22 recaptures came from the April, 1948, release, 3 tag recoveries originated from the May, 1948, planting, and 2 tagged brown trout were retaken which were planted in June, 1948.

Other recaptures on this series of plantings were reported by mail by interested anglers, and conservation officers of the Mio district also obtained tags and data both at the headquarters and in the field. Through these latter sources, records of an additional 72 recaptures were obtained; 65 of these records listed the tag number so the month of planting was identifiable. Of the 65 usable recoveries, 2 were survivors from the November, 1947, release, 32 came from the April, 1948, planting, 16 originated from the May, 1948, planting, and 15 came from the planting of June, 1948. If tag recoveries from all sources are combined, a total of 100 recoveries have been reported during 1948. Excluding the 7 recoveries noted without tag numbers, the remaining 93 fish originated from the four plantings as follows:

November, 1947	- - - -	2
April, 1948	- - - -	55
May, 1948	- - - -	19
June, 1948	- - - -	17

On the basis of the recovery data at hand it appears that any of the plantings made during the current season furnished the anglers with far more sport than did the planting of a similar number of fish during the previous fall, as approximately equal numbers of tagged fish were planted in the various months. The April, 1948, release has provided the most recoveries to date. No estimate of the total percentage of recovery from the various months of planting can be made, as an unknown portion of the total fishing was not checked.

## Hatchery Releases in the Areas Covered

by Creel Census in 1948

The number of hatchery trout planted in the stream areas reported on by the two types of creel census is given in Table 5. All 1948 releases were marked by clipping the adipose fin or by jaw-tagging. Except for the brook trout plantings, which were 46 percent lower, 1948 releases of trout were approximately equal to those made in 1947. The apparent increases in the rate of stocking brown and rainbow trout resulted from the addition of the Mio-McKinley Bridge area on the Main Au Sable to the 1948 census. Combining the plantings in the areas under consideration, the ratio of the species released was approximately 4 brown trout to 1 brook trout to 1 rainbow trout. In the combined catches of adipose-marked trout reported by the volunteer census the ratio of the species was approximately 4 brook trout to 3 brown trout to 1 rainbow trout, while in the Mio-McKinley Bridge weekend census, the ratio of the species taken was 62 brown trout to 1 rainbow trout; in the volunteer records for that area the ratio was 30 brown trout to 1 rainbow trout (while the planting ratio in that area was approximately 11 brown trout to 1 rainbow trout).

Based on the records turned in by the volunteer recorders, brown trout dominate the catches of naturally-reared fish on the Main Stream and the South Branch, while the brook trout make up the majority of the catches of wild fish on the North Branch and on Big Creek in Crawford County. Wild brown trout appeared to be slightly



Table 5. Hatchery plantings of adult trout in the Au Sable drainage, 1948, for stream areas reported on by voluntary and weekend creel censuses.

Stream	Totals released, 1948, by species			Totals
	Brook trout	Brown trout	Rainbow trout	
Main Stream (upper)	...	16,250	6,332	22,582
Main Stream (Mio-McKinley Bridge)	...	15,556	1,437	16,993
East Branch	2,800	...	...	2,800
North Branch	5,600	...	...	5,600
South Branch	...	10,200	3,500	13,700
Big Creek (Crawford County)	2,600	...	...	2,600
Totals, 1948	11,000	42,006	11,269	64,275
Totals, 1947 <sup>1</sup>	20,400	14,956	5,100	40,456

<sup>1</sup> Mio-McKinley Bridge area not covered by census in 1947.

in excess of wild brook trout in the few records turned in for the East Branch. Wild rainbow trout were reported only from the Main Stream, East Branch, and South Branch and in relatively small numbers.

Some conclusions that seem warranted by the 1948 studies on the Au Sable drainage are:

1. In that portion of the drainage lying above the mouth of the North Branch, wild trout provide between 70 and 80 percent of the anglers' take, despite releases of approximately 40,000 adult fish.

2. However, in the Main Stream below Mio Dam, wild trout made up only 32.6 percent of the total catch of the random weekend census, 46.2 percent of the catch recorded by the volunteer census for that area.

3. In all parts of the drainage the hatchery plantings of the current year constituted the majority of the planted trout taken. Except in the heavy water between Mio Dam and McKinley Bridge, where survivors of plantings one and two years' earlier made up about 7 percent and 1 percent respectively of the total catch, "carryover" recoveries were a negligible factor in the take.

4. Incomplete results to date from a large-scale tagging experiment in the Mio Dam-McKinley Bridge area, involving artificially-reared adult brown trout, tend to confirm the general conclusion reached from earlier tagging experiments in Michigan that relatively few fall-planted trout live to the following season compared with the number surviving from open-season plantings. Fall planting in streams is an unsound procedure when the present high cost of rearing trout

to adult size is considered. To date, adult brown trout released in April have given the highest return to the angler in this experiment.

5. The 1948 data on night fishing was similar to that obtained in previous years, and indicated that the after-dark anglers are not taking more than their share of the total catch.

While it would be highly desirable to operate creel censuses of a more intensive nature on this and other trout stream drainages throughout the state, the cost of such censuses is prohibitive. The present volunteer-type census, although not giving information as to the total catch and total angling pressure, has indicated general trends in the fishing and the proportions of the different species and the proportion of natural and artificially-raised fish in the catch of the several streams. The records are of more significance with each year's information that is added, and it is hoped that the present list of cooperators will continue their good work, and also persuade their fishing companions to keep similar records.

#### Acknowledgments

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