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THE TWENTY-THIRD ANNUAL INTENSIVE CREEL CENSUS,
HUNT CREEK TROUT RESEARCH STATION, 1961

By

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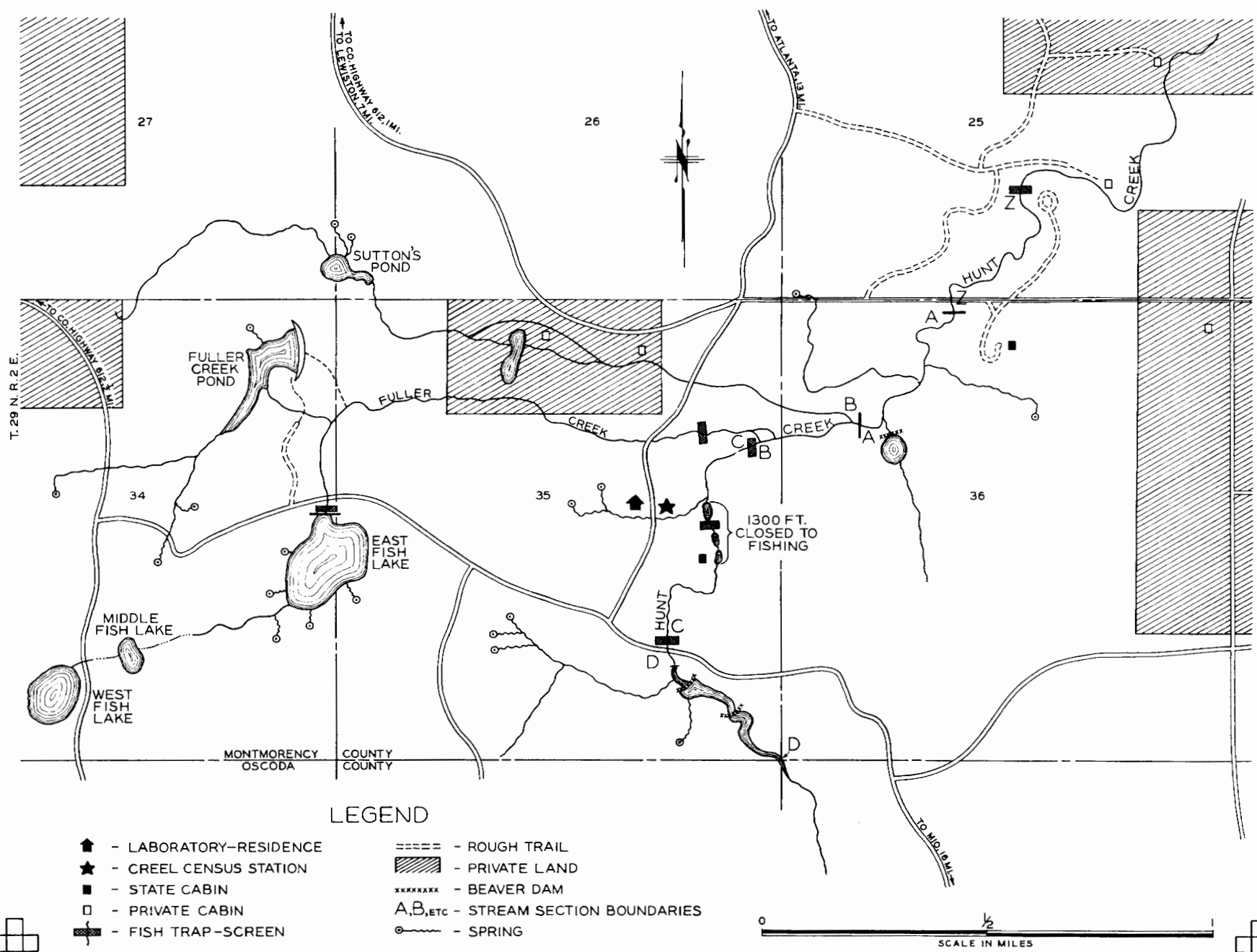
The Hunt Creek Trout Research Station and its experimental waters (Fig. 1) are located on the headwaters of Hunt Creek in south-central Montmorency County. Hunt Creek is a tributary of the Thunder Bay River, is about 10 miles long, and is regarded as good trout water.

Angling on the experimental stream sections and ponds was censused for the twenty-third consecutive year. Waters included in the census were: Hunt Creek, Fuller Creek, Fuller Creek Pond, and East Fish Lake. Morphometry and fishing regulations applying to various experimental subdivisions are given in Table 1.

Creel census methods

Each angler fishing the Area is required, by Conservation Commission order, to obtain a free daily permit from the centrally-located Department office. Upon completion of an angling trip he must return to the checking station and allow inspection of his catch and furnish other pertinent information.

MICHIGAN DEPARTMENT OF CONSERVATION
 FISH DIVISION
HUNT CREEK FISHERIES EXPERIMENTAL AREA
 MONTMORENCY COUNTY



LEGEND

- ▲ - LABORATORY-RESIDENCE
- ★ - CREEL CENSUS STATION
- - STATE CABIN
- - PRIVATE CABIN
- ⊠ - FISH TRAP-SCREEN
- ⋯⋯⋯ - ROUGH TRAIL
- ▨ - PRIVATE LAND
- xxxxxxx - BEAVER DAM
- A,B,ETC - STREAM SECTION BOUNDARIES
- - SPRING



Figure 1

HUNT CREEK FISHERIES EXPERIMENTAL AREA

OBJECTIVE -- The Hunt Creek Fisheries Experiment Station was established in 1939 as a year-round testing ground and outdoor research laboratory where trained biologists might study brook trout and the effects of angling on a typical brook trout stream. The Hunt Creek drainage was chosen because of availability of state-owned stream frontage and also because of the variety of brook trout habitats present in the area.

State ownership has made possible various experimental restrictions and management procedures not otherwise feasible.

The purpose of the investigations is to find out by observation or by controlled experiments what methods of stream management will increase the quality of the brook trout angling and also preserve the species for the enjoyment of future anglers.

THE ANGLERS' PART IN OUR RESEARCH -- The best measure of an experimental procedure in trout stream management is how it affects the anglers' catch. Therefore, registration of anglers and collection of creel census records constitute an important part of the work each year. Such records provide a measure of the effects of changes in size and creel limits, and, in connection with marking experiments and year-round population estimates, reveal origin and movements of trout within the system. Creel census records compared with population estimates correspond to sales records compared with production schedules in industry.

RESEARCH HERE DURING THE LAST TEN YEARS -- has indicated that:

- (1) Natural reproduction is more than adequate in Hunt Creek;
- (2) Fall plantings of hatchery-reared brook trout fingerlings contribute less than 3% to the anglers' catches in subsequent years;
- (3) Stream improvement, properly carried out, can improve the quality of angling.
- (4) Tributary streams are not an important source of adult fish for main stream angling;
- (5) In the proper type of lake good brook trout fishing can be created by the elimination of rough fish populations.

Some of the other accomplishments of the station include detailed food studies of the brook trout by Dr. J. W. Leonard, who also identified new species of trout stream insects not previously described; an exhaustive study of the use of brook trout scales in age and growth studies of Michigan brook trout by Dr. E. L. Cooper; and the development by the past and present staff of the electric shocker as a substitute for seines in trout population investigations.

CURRENT INVESTIGATIONS -- include further study of brook trout movements in the main stream through the use of the recently-installed upper and lower screens, detailed year-round population studies on the brook trout population between these traps, trout lake and beaver pond population studies by means of netting, marking and recovery, and investigations of the effect of beaver dams on the fishing in dammed portions of trout streams.

REGULATIONS -- Except for about 1,300 feet of stream in Section C of Hunt Creek, all the waters on the map on the reverse of this sheet are open to angling. The posted waters, marked by Departmental signs, are open to angling under the following restrictions set by the Conservation Commission:

- (1) Each angler must first obtain at the checking station a daily free-use permit before fishing.
- (2) Each angler must report the results of his fishing at the checking station on conclusion of his angling.
- (3) Special regulations are to be observed in certain waters and such waters will be posted with appropriate signs. Otherwise the usual regulations for other waters of the state are in effect on the Hunt Creek Area.

SUMMARY, ANGLING STATISTICS, EXPERIMENTAL SECTIONS, HUNT CREEK, 1939-1949

	YEAR										
	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949
TOTAL ANGLER-DAYS.....	438	505	1,015	800	311	340	375	753	607	504	593
TOTAL HOURS FISHED.....	780	901	1,546	1,267	540	640	637	1,206	872	869	1,415
LEGAL BROOK TROUT TAKEN.	492	406	722	543	378	364	315	439	187	492	698
TOTAL POUNDS REMOVED....	57	60	116	83	59	53	52	68	26	78	115
CATCH PER HOUR.....	0.63	0.45	0.47	0.43	0.70	0.57	0.49	0.36	0.21	0.57	0.49
AVERAGE TOTAL LENGTH....	7.5	7.6	7.7	7.6	7.5	7.7	7.9	7.7	7.6	7.7	7.8

SUMMARY, ANGLING STATISTICS, EAST FISH LAKE, 1939-1949

	YEAR										
	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949
TOTAL ANGLER-DAYS.....	63	111	155	159	121	311	436	430	344	287	283
TOTAL HOURS FISHED.....	126	308	386	289	200	651	928	935	711	853	1,024
LEGAL BROOK TROUT TAKEN.	51	172	242	367	69	108	169	93	89	117	91
TOTAL POUNDS REMOVED....	--	28	47	97	26	79	131	69	54	55	70
CATCH PER HOUR.....	0.41	0.55	0.63	1.26	0.29	0.17	0.18	0.10	0.13	0.14	0.09
AVERAGE TOTAL LENGTH....	--	8.0	8.5	9.0	9.3	11.2	11.9	11.5	11.1	10.4	11.6

Table 1. --Morphometry (mileage in parentheses) of experimental waters of Hunt Creek drainage, with angling regulations for 1961

Experimental water	Dimensions			1961 regulations		
	Length (feet)	Average width (feet)	Area (acres)	Lure	Minimum length (inches)	Daily creel limit
<u>Section of Hunt Creek</u>						
Z	2,397 (0.45)	20.3	1.12	Any	7	10
A	2,577 (0.49)	24.3	1.44	Any	7	10
B	1,605 (0.30)	17.5	0.64	Any	7	10
C [↓]	2,700 (0.51)	11.8	0.71	Any	7	10
D	2,896 (0.55)	100.0	6.65	Any	7	10
Total, Hunt Creek	12,175 (2.30)	37.8	10.56			
Fuller Creek	9,875 (1.87)	15.7	3.57	Any	7	10
Fuller Creek Pond	...	...	14.58	No live fish	10	5
East Fish Lake	...	...	16.0	No minnows	10	5

[↓] Excludes 1,270 feet of Section C which are experimental diversions closed to fishing.

During the 1961 season, 1,046 permits were issued to anglers who made 1,413 angling trips. An angler trip resulted whenever a person fished one of the designated stream sections or ponds on the Area; one angler was listed as making more than one trip on any date when he fished on more than one stream section or pond. The number of permits and the number of trips declined slightly from 1960.

Male licensees made 73.7 percent of the trips; female licensees, 0.9 percent; wives, 4.2 percent; minor males, 18.4 percent; and minor females, 2.8 percent.

Acknowledgments

O. H. Williams, D. D. Brooks, A. M. Schiffman, G. D. Betts, T. H. Turppa, and O. M. Corbett assisted in the collection and tabulation of the creel census records. K. G. Fukano processed the data for IBM tabulation. The Accounting Section of the Conservation Department did the card punching, verifying, and tabulating on IBM equipment.

Recovery of planted trout

Table 2 summarizes the results from plantings made in 1958, 1959, and 1960 of hatchery-reared trout in East Fish Lake and Section D Pond. By the end of the 1961 trout season 1,248 hatchery trout weighing 886.6 pounds had been recovered from these plantings for a recovery percentage of 44.6 by number and 171.5 by weight.

Table 2.--Angler catch of hatchery-reared trout released in the experimental waters of Hunt Creek during
1958, 1959 and 1960

Area and date of planting	Trout planted			Range in length (inches)	Legal trout creeded [↓]			Total legal trout creeeded to date			
	Species	Number	Pounds		1959	1960	1961	Number		Pounds	
								Total	Percent- age	Total	Percent- age
E. Fish Lake											
Oct., 1958	Brook	300	75	8.5-9.5	88 (49.7)	0	0	88	29.3	49.7	66.3
Oct., 1959	Brook	300	78	8.5-9.5	0	68 (33.7)	0	68	22.7	33.7	43.2
Oct., 1960	Brook	300	84	8.5-9.5	0	0	158 (73.8)	158	52.7	73.8	87.9
E. Fish Lake											
Oct., 1958	Rainbow	300	69	8.5-9.5	197 (187.6)	34 (76.8)	2 (7.0)	233	77.7	271.4	393.3
Oct., 1959	Rainbow	300	75	8.5-9.5	0	210 (129.5)	33 (72.8)	243	81.0	202.3	269.7
Oct., 1960	Rainbow	300	76	8.5-9.5	0	0	252 (210.6)	252	84.0	210.6	277.1
Section D Pond											
Sept., 1959	Brook	500	20	3.0-6.9	0	113 (28.7)	5 (1.5)	118	23.6	30.2	151.0
Sept., 1960	Brook	500	40	5.0-6.9	0	0	88 (14.9)	88	17.6	14.9	37.3
Total		2,800	517		285 (237.3)	425 (268.7)	538 (380.6)	1,248	44.6	886.6	171.5

[↓] Weight in parentheses.

On October 15, 1958, 300 hatchery-reared rainbow trout weighing 69 pounds and averaging 8.9 inches in total length were released in East Fish Lake. During the 1959 trout season anglers caught 197 of these trout weighing a total of 187.6 pounds; in 1960 they creeled 34 carry-over fish weighing 76.8 pounds; and in 1961 two more trout weighing a total of 7.0 pounds were taken. Thus, by the end of the 1961 season, anglers had recovered 233 fish (77.7 percent numerical recovery) with a total weight of 271.4 pounds (393.3 percent of the weight planted).

A second planting of 300 rainbow trout weighing 75 pounds was made in East Fish Lake on October 15, 1959. These trout averaged 8.9 inches long. During the 1960 trout season anglers creeled 210 (70 percent) legal-length trout (minimum size 10.0 inches) that weighed 129.5 pounds (172.7 percent return of the weight planted). In addition, 6 sublegal length fish weighing a total of 2.0 pounds were brought in. During 1961, anglers creeled 33 additional trout (72.8 pounds) from this planting. The total recovery to date from the rainbow plant of 1959 is 243 trout (81.0 percent) and 202.3 pounds (269.7 percent of the weight planted).

A third planting of 300 rainbow trout weighing 76 pounds and averaging 8.9 inches was made on October 15, 1960. During the 1961 trout season anglers creeled 252 legal-sized trout weighing 210.6 pounds. In addition, 3 sublegal-length rainbows (1.0 pound) were brought in.

In all three years, 1958, 1959 and 1960, the plants of rainbow trout were matched with plants of hatchery-reared brook trout of the same average length (Table 2).

Of the brook trout planted in 1958, anglers in 1959 caught 88 (29.3 percent) that weighed 49.7 pounds (66.3 percent of the weight planted); none were caught in 1960 or 1961. Of the brook trout planted in 1959, 68 (22.7 percent) that weighed 33.7 pounds (43.2 percent of the planting weight) were caught in 1960. In addition, one sublegal trout was creeled from the planting. No carry-over fish were recovered in 1961. Of those planted in 1960, anglers in 1961 recovered 158 legal trout (52.7 percent) that weighed 73.8 pounds (planting weight recovered--87.9 percent). In addition, 5 sublegal trout were creeled by anglers.

On September 21, 1959, 500 hatchery brook trout ranging from 3.0-6.9 inches in length were planted in Section D Pond. In 1960, anglers caught 113 trout that weighed 28.7 pounds. During 1961, 5 additional trout weighing 1.5 pounds were creeled from this planting bringing the recovery to date to 118 trout (23.6 percent) and 30.2 pounds (151 percent of the weight planted).

A second planting of 500 hatchery-reared brook trout that ranged in length from 5.0 to 6.9 inches was made in Section D Pond in September 1960. During 1961, anglers recovered 88 trout (17.6 percent of the number planted) that weighed 14.9 pounds (37.3 percent return on weight planted). Fifteen trout (18 percent) were recovered in Section C of Hunt Creek downstream from the planting area. On November 16, 1960, the

beaver dam in Section D broke and the pond reverted to normal stream channel level. The poor return from this plant (in comparison with the plant made in 1959) and the extensive downstream movement of the planted trout can be attributed to the failure of the dam.

Angling results

A summary of statistics for the various waters of the area is given in Table 3. Residual populations of trout at the close of the fishing season, as estimated from electrofishing, are shown in Table 4. Physical characteristics of the experimental waters were described in earlier reports. In general, Sections Z and A, the lowermost stream sections, are wider, deeper, and more open than sections B, C, and Fuller Creek. During the 1961 season Section D consisted of a stream channel through a chain of beaver ponds that had washed out in the fall of 1960. Beaver attempted to rebuild the various dams during the summer of 1961, but were unsuccessful until after the trout season. Fuller Creek Pond is maintained by an earthen dam on the site of a former beaver dam. East Fish Lake, also in the Fuller Creek drainage, is a 16-acre cold-water lake whose outlet is blocked by a low earthen dam in which a Wolf-type fish trap effectively blocks fish migration.

Hunt Creek

The 1961 trout season was the second season in which Sections Z and A were fished under the usual Michigan trout fishing

Table 3.--Summary of angling data, experimental waters of Hunt Creek drainage, 1961

Experi- mental water	Total fishing			Trout caught					
	Trips	%trips success- ful	Hours	Species	Origin	Num- ber	Pounds	Average length (inches)	Trout per hour
Section of Hunt Creek									
Z	172	35	390.0	Brook	Wild	151	22.14	7.6	0.39
A	138	50	296.0	Brook	Wild	202	29.88	7.6	0.68
B	89	44	138.5	Brook	Wild	86	12.83	7.6	
				Rainbow	Wild	1	0.14	7.4	
				All		87	12.97	7.6	0.63
C	212	30	364.5	Brook	Wild	113	17.17	7.6	
				Brook	Hatchery	15	1.90	7.5	
				Rainbow	Wild	2	0.34	7.9	
				All		130	19.41	7.6	0.36
D Pond and stream	162	31	285.0	Brook	Wild	99	18.27	8.2	
				Brook	Hatchery	78	14.51	8.1	
				All		177	32.78	8.2	0.62
Total Hunt Creek	773	36	1,474.0	Brook	Wild	651	100.29	7.7	0.44
				Brook	Hatchery	93	16.41	8.0	
				Rainbow	Wild	3	0.48	7.7	
				All		747	117.18	7.8	0.51
Fuller Creek	135	33	246.0	Brook	Wild	99	14.18	7.6	0.40
Fuller Creek Pond	48	29	112.5	Brook	Wild	21	9.69	10.7	0.19
East Fish Lake	457	43	1,548.0	Brook	Wild	21	10.90	11.2	
				Brook	Hatchery	158	73.84	10.8	
				Rainbow(1958)	"	2	6.97	20.2	
				Rainbow(1959)	"	33	72.77	17.6	
				Rainbow(1960)	"	252	210.61	12.8	
All		466	375.09	12.3	0.30				
All waters	1,413	38	3,380.5	Brook	Wild	792	135.06	7.9	
				Brook	Hatchery	251	90.25	9.8	
				Rainbow	Wild	3	0.48	7.7	
				Rainbow	Hatchery	287	290.35	13.2	
				All		1,333	516.14	9.4	0.39
Sublegal all waters						28	5.07	7.8	

Table 4. --The fall populations of legal (7.0+ inches) and sublegal (1.5-6.9 inches) wild brook trout in Sections Z, A, B, and C, Hunt Creek, 1949-1961

Year	Section Z		Section A		Section B		Section C	
	Sublegal	Legal	Sublegal	Legal	Sublegal	Legal	Sublegal	Legal
1949	1,413	95	2,156	41	1,040	15	1,437	19
1950	1,989	89	1,687	70	1,231	29	1,351	41
1951	1,210	71	1,940	41	896	23	2,159	34
1952	1,130	75	2,472	44	1,109	28	2,126	21
1953	1,641	42	2,957	35	1,157	19	1,305	16
1954	1,545	40	3,203	47	1,407	9	2,328	27
1955	1,276	88	2,563	105	1,147	30	1,638	44
1956	904	109	2,403	158	1,003	29	2,212	30
1957	1,527	67	3,015	68	1,257	35	2,632	31
1958	1,455	54	2,459	72	1,288	44	2,555	35
1959	1,190	263	2,331	280	1,349	99	1,682	32
1960	1,481	105	2,689	157	1,444	66	1,884	34
1961	1,285	109	1,548	102	1,085	42	1,088	26

regulations. During the period 1955-1959 these two sections were fished under a "flies-only" regulation. A separate report summarizing the results of the flies-only study in detail is in press.

In 1961 anglers fishing Section Z creeled 151 legal-sized trout (22 pounds) in 172 trips, at an average rate of 0.39 trout per hour. Trout averaged 7.6 inches in total length. The catch was 20 percent below the average for the last 12 years. Fishing pressure and catch per hour were also below average but the size of the captured trout remained the same.

Thirty-five percent of all anglers were successful in taking one or more trout per trip compared to 57 percent success in 1960. Five sublegal trout were creeled and 1,195 sublegal fish were reported caught and returned to the water.

A population study¹ made in October 1961 indicated that approximately 109 legal and 1,285 sublegal brook trout remained in Section Z at the end of the trout season. The residual population of legal-size trout showed a 12 percent increase, whereas sublegal-sized trout showed an 8 percent decline compared to the average of the last 12 years.

In Section A anglers creeled 202 trout (30 pounds) in 138 trips for a catch per hour of 0.68 trout. Fifty percent of the anglers were successful. As in Section Z the fishing pressure, catch and catch per

¹ Population studies are made each year in September or early October. Fish are collected by electrofishing, and estimates are based on mark-and-recapture ratios.

hour dropped this season but they were similar to the 12-year averages for Section A. Four sublegal trout were creeled and anglers reported the capture and release of 1,224.

About 102 legal and 1,548 sublegal wild brook trout remained in Section A after the trout season. The legal population showed a 10 percent increase whereas the sublegal population showed a 38 percent decline, for the smallest population of sublegal trout recorded in the last 13 years.

Section B yielded 86 wild brook trout and 1 wild rainbow trout to anglers in 89 trips. Trout were caught at 0.63 fish per hour and they averaged 7.6 inches long. Fishermen reported catching and releasing 736 sublegal trout.

Post-season population estimates indicated that 42 legal and 1,085 sublegal brook trout remained in Section B. The legal population was up 12 percent and the sublegal population was down 9 percent from the 12-year average.

Anglers creeled 113 wild brook trout (17 pounds) in 212 trips to Section C. In addition, 2 wild rainbow trout (0.3 pound) and 15 hatchery brook trout (1.9 pounds) were caught. In 365 hours of fishing anglers averaged 0.36 fish per hour and these trout averaged 7.7 inches long. Nine sublegal trout were creeled and 1,103 sublegal trout were caught and released by the fishermen. Fall population estimates indicated that 26 legal and 1,088 sublegal wild brook trout remained after the trout season. This represents a 13 percent drop in legal and a 44

percent drop in sublegal trout compared to the 12-year average. A possible reason for the decline in the population of sublegal trout may have been the reduced reproductive success caused by the extreme flooding of Section C which resulted from the breakage of the Section D beaver dam. Section C would be affected most because it is immediately below Section D.

Section D, the uppermost section of Hunt Creek, was mostly stream habitat during the 1961 season because the beaver dam broke in November 1960. The beaver were not successful in impounding the stream until after the trout season. In 1961, anglers made 162 trips to Section D. They creeled 99 wild and 78 hatchery brook trout in 285 hours of fishing. These trout averaged 8.2 and 8.1 inches long respectively. The catch of wild trout was 3 trout greater than in 1960 whereas the catch of hatchery trout declined by 27, probably because of the failure of the beaver dam.

For Hunt Creek as a whole, 651 wild brook trout (weighing 100 pounds) were creeled in 1961. This is a marked reduction from the catch made in 1960 but is only 10 percent less than the 12-year average. In addition 93 hatchery brook trout (16 pounds) and 3 wild rainbow trout (0.5 pound) were creeled. Thus the total catch was 747 trout weighing 117 pounds. Trout averaged 7.8 inches in total length. Anglers spent 1,474 hours of fishing on Hunt Creek and creeled fish at an average rate of 0.40 trout per hour.

A small population of 37 wild rainbow trout was present in Hunt Creek in October, 1961. These trout ranged between 5 and 9 inches total length (age group I) and were survivors of 130 young-of-the-year rainbow that were present in the fall of 1960. No young (0 age group) rainbow were noted in 1961.

Angling results during the 10 2-week periods of the 1961 season on Hunt Creek are summarized in Table 5. The first period had about twice the fishing pressure of any other period and 39 percent of the catch for the entire season was made then. Pressure varied between 47 and 199 hours during the remaining 9 periods and catches varied from 13 to 88 trout per period.

Fuller Creek

In 135 trips to Fuller Creek anglers creeled 99 wild brook trout (14 pounds). Trout averaged 7.6 inches long. Anglers were successful on 33 percent of their trips and caught fish at an average rate of 0.40 trout per hour. Compared to the previous 21-year average, the catch was 71 percent better and fishing pressure was 18 percent greater.

Fuller Creek Pond

An earthen dam on the site of an old beaver dam maintains this impoundment. In 1961 anglers creeled 21 wild brook trout weighing a total of 9.7 pounds. Trout averaged 10.7 inches long and 0.19 trout were caught per hour of fishing. Returns of both wild and hatchery-reared trout have been poor in recent years. The outlet of the pond

Table 5.--Biweekly angling statistics for wild brook trout, Sections Z, A, B, C and D of Hunt Creek
(combined), 1961

Period	Date	Total fishing		Wild trout		Catch per hour		Average total length (inches)	Average weight (pound)
		Trips [↓]	Hours	Num-ber	Pounds	Num-ber	Pound		
1	April 29-May 12	237 (104)	517.5	256	38.930	0.50	0.08	7.8	0.152
2	May 13-May 26	28 (21)	49.5	51	6.940	1.03	0.14	7.5	0.136
3	May 27-June 9	114 (40)	199.0	88	14.490	0.44	0.07	7.7	0.165
4	June 10-June 23	23 (4)	47.0	13	1.670	0.28	0.04	7.4	0.128
5	June 24-July 7	73 (23)	148.5	47	7.820	0.32	0.05	7.8	0.166
6	July 8-July 21	42 (15)	85.5	35	5.695	0.41	0.07	7.7	0.163
7	July 22-Aug. 4	70 (14)	101.0	32	5.060	0.32	0.05	7.6	0.158
8	Aug. 5-Aug. 18	84 (32)	144.0	62	10.325	0.43	0.07	7.8	0.167
9	Aug. 19-Sept. 1	51 (17)	90.0	40	6.325	0.44	0.07	7.7	0.158
10	Sept. 2-Sept. 10	51 (12)	92.0	27	4.035	0.29	0.04	7.6	0.149
Total or average		773 (282)	1,474.0	651	101.290	0.44	0.07	7.7	0.156

[↓] Number of successful trips in parentheses.

was altered in the fall of 1961. The alterations are expected to improve the environment for trout and results will be evaluated in the next few years.

East Fish Lake

During 1961 anglers spent 1,548 hours fishing East Fish Lake. They caught 466 trout that weighed a total of 375 pounds (Table 2). The catch, by number and by weight, was the greatest recorded at the lake. The catch was composed mostly of hatchery rainbow trout. There were 252 recoveries of the rainbows planted in October 1960. They averaged 12.8 inches long; 33 from the plant of October, 1959 averaged 17.6 inches long; and 2 from the plant of October, 1958 averaged 20.2 inches.

Anglers caught 158 of the brook trout planted in October, 1960 and these trout averaged 10.8 inches long. In addition, 21 wild brook trout were taken that averaged 11.2 inches long.

The increased catch during 1959, 1960, and 1961 at East Fish Lake can be attributed to advantages provided by rainbow trout plantings. First, a greater percentage of rainbows than brook trout survive over winter to the opening of the next trout season. Secondly, most (90 percent) of the brook trout are caught within the first month of the season whereas only about 40 percent of the season's catch of rainbows is made in the first month. Thus, in the absence of rainbow trout, angling quality declines during the major part of the trout season. Further,

rainbows utilized the lake's productivity, they grew rapidly and made up a large part of the poundage removed by anglers.

All waters

From all experimental waters of the Area, anglers creeled 1,333 trout (total weight, 516 pounds) in 1,413 trips involving 3,381 hours of angling (Table 3). The catch decreased by 28 percent from the record catch made in 1960 and fishing pressure dropped slightly. Compared to the 1939-1961 averages, 1961 was an above average season for catch and fishing pressure.

Table 6 summarizes the 1939-1961 fishing statistics on Hunt Creek. Table 7 is a tabulation of Fuller Creek angling data for the 1940-1961 period.

Summary of lures used

The 1961 catch is summarized in Table 8 according to the lures used to capture trout. Area waters were grouped into two categories, according to habitat (Table 8).

On streams (Section Z, A, B, C, D of Hunt Creek and Fuller Creek) anglers used worms or worms and spinners on 79 percent of their trips and these lures accounted for 75 percent of the trout caught. Fishermen using other live bait or a combination of lures made 11 percent of the trips and caught 14 percent of the fish. Fly fishermen made 9 percent of the trips and accounted for 10 percent of the catch. Anglers using other artificial lures made 1 percent of the trips and caught 1 percent of the fish.

Table 6. --Legal wild brook trout caught in Hunt Creek, 1939-1961

Section and year	Total fishing		Total catch		Catch per hour		Average size	
	Trips	Hours	Number	Pounds	Number	Pound	Length (inches)	Weight (pound)
<u>A, B, C and D</u>								
1939	438	780	461	67	0.59	0.09	7.5	0.15
1940	505	901	406	60	0.45	0.07	7.6	0.15
1941	1,015	1,546	706	113	0.46	0.07	7.7	0.16
1942	808	1,267	532	83	0.42	0.07	7.6	0.16
1943	311	540	372	59	0.69	0.11	7.5	0.16
1944	340	640	337	53	0.53	0.08	7.7	0.16
1945	375	637	312	52	0.49	0.08	7.9	0.17
1946	753	1,206	434	68	0.36	0.06	7.6	0.16
1947	607	872	184	26	0.21	0.03	7.6	0.14
1948	504	869	476	78	0.55	0.09	7.7	0.16
1949	432	1,063	517	87	0.49	0.08	7.8	0.17
1950	369	915	415	75	0.45	0.08	8.0	0.18
1951	552	1,066	431	76	0.40	0.07	8.0	0.18
1952	488	1,195	556	103	0.47	0.09	8.0	0.19
1953	656	1,587	572	118	0.36	0.07	8.4	0.21
1954	748	1,649	483	88	0.29	0.05	8.0	0.19
1955	702	1,522	508	94	0.33	0.06	8.0	0.19
1956	704	1,245	585	104	0.47	0.08	7.8	0.19
1957	668	1,307	630	123	0.48	0.09	8.1	0.20
1958	701	1,257	583	121	0.46	0.10	8.2	0.21
1959	590	1,060	433	81	0.41	0.08	7.9	0.19
1960	641	1,179	674	122	0.57	0.10	8.0	0.18
1961	601	1,084	500	78	0.46	0.07	7.7	0.16
<u>Z</u>								
1949	165	375	186	28	0.50	0.07	7.6	0.15
1950	165	473	160	21	0.34	0.04	7.4	0.13
1951	129	322	124	18	0.39	0.06	7.5	0.14
1952	188	570	222	34	0.39	0.06	7.7	0.15
1953	225	566	183	27	0.32	0.05	7.6	0.15
1954	363	838	143	22	0.17	0.03	7.7	0.16
1955	139	293	198	29	0.68	0.10	7.6	0.15
1956	176	354	197	32	0.56	0.09	7.6	0.16
1957	113	218	127	22	0.58	0.10	7.9	0.17
1958	84	175	101	15	0.58	0.09	7.6	0.15
1959	97	197	118	17	0.60	0.09	7.5	0.14
1960	227	541	509	91	0.94	0.17	8.0	0.18
1961	172	390	151	22	0.39	0.06	7.6	0.15

Table 7.--Legal wild brook trout caught in Fuller Creek, 1940-1961

Year	Total fishing		Total catch		Catch per hour		Average size	
	Trips	Hours	Number	Pounds	Number	Pound	Length (inches)	Weight (pound)
1940	20	36	16	3	0.44	0.08	...	0.19
1941	59	97	21	3	0.22	0.03	...	0.15
1942	31	39	11	2	0.28	0.05	8.3	0.18
1943	19	25	19	3	0.76	0.12	7.6	0.14
1944	96	145	61	8	0.42	0.06	7.6	0.15
1945	102	159	64	9	0.40	0.06	7.5	0.14
1946	223	278	56	8	0.20	0.03	7.4	0.14
1947	212	219	27	4	0.12	0.02	7.5	0.14
1948	190	196	31	5	0.16	0.03	7.7	0.16
1949	115	295	43	6	0.15	0.02	7.4	0.13
1950	107	185	12	2	0.06	0.01	7.6	0.16
1951	110	246	59	9	0.24	0.04	7.6	0.16
1952	85	221	64	10	0.29	0.05	7.6	0.15
1953	86	212	84	14	0.40	0.07	7.8	0.16
1954	99	201	68	11	0.34	0.05	7.7	0.16
1955	110	214	68	10	0.32	0.05	7.6	0.14
1956	230	476	192	35	0.40	0.07	8.0	0.18
1957	179	377	76	12	0.20	0.03	7.6	0.15
1958	159	332	71	11	0.21	0.03	7.7	0.16
1959	126	224	70	11	0.30	0.05	7.6	0.16
1960	134	222	98	15	0.44	0.07	7.6	0.15
1961	135	246	99	14	0.40	0.06	7.6	0.14

Table 8. --A comparison of different fishing lures showing frequency of use, numbers of trout caught, and catch per hour, Hunt Creek Trout Research Station, 1961

Water	Lure	Number of angler trips	Percent- age of total trips	Number of trout caught	Percent- age of total catch	Number of hours fished	Average catch per hour
<u>Streams</u>							
(Sections Z, A, B, C, D and Fuller Creek)	Worm	619	68.2	531	62.9	1,202.0	0.44
	Worm and spinner	97	10.7	102	12.1	181.0	0.56
	Flies	85	9.4	82	9.7	160.0	0.51
	Minnnow	36	3.9	54	6.4	43.5	1.24
	Insect	1	0.1	1	0.1	1.0	1.00
	Artificial lure	6	0.7	11	1.3	6.5	1.69
	Natural	2	0.2	0	0.0	3.0	0.00
	Combination	62	6.8	63	7.5	123.0	0.51
	Totals	908	100.0	844	100.0	1,720.0	0.49
<u>Ponds</u>							
(Fuller Pond and East Fish Lake)	Worm	256	50.7	208	42.7	926.5	0.22
	Worm and spinner	61	12.0	52	10.7	219.0	0.24
	Flies	18	3.6	7	1.4	30.5	0.23
	Insect	5	1.0	10	2.0	10.0	1.00
	Artificial lure	55	10.9	86	17.7	130.0	0.66
	Natural	2	0.4	0	0.0	3.0	0.00
	Combination	107	21.2	124	25.5	339.0	0.37
	Unknown	1	0.2	0	0.0	2.5	0.00
	Totals	505	100.0	487	100.0	1,660.5	0.29

On pond waters (Fuller Creek Pond and East Fish Lake) anglers used worms or worms and spinners on 63 percent of their trips and caught 53 percent of the fish. Anglers using other live baits or a combination of lures made 23 percent of the trips and accounted for 28 percent of the trout. Fly fishermen made 3 percent of the trips and caught 1 percent of the fish, whereas anglers using other artificial lures made 11 percent of the trips and caught 18 percent of the fish.

In general, effort with, and catch by particular lures were proportional. There are no striking differences between lures in view of the high variability in angler skill. These data do point up the fact that worms only or worms in combination with various types of spinners are used by the great majority of anglers when there are no lure restrictions. Only 10 percent of the anglers elected to use flies or artificial lures in their fishing.

Number of trout caught per trip (Table 9)

On waters with a daily creel limit of 10 trout and a minimum size of 7 inches, anglers creeled 6 or more trout on 3.0 percent of the trips; but these trips accounted for 23.2 percent of the season's catch from Hunt Creek and Fuller Creek. Sixty-four percent of the anglers failed to catch a trout.

From waters with a daily creel limit of 5 trout and a minimum size limit of 10 inches, anglers made limit catches on 5.7 percent of the trips. These trips accounted for 29.8 percent of the catch. On

Table 9. --Number and percentage of fishing trips
on which different numbers of trout were caught,
Hunt Creek Trout Research Station, 1961

Number of trout caught per trip	Daily creel limit ¹ 10 trout, 7 inches		Daily creel limit ² 5 trout, 10 inches	
	Number of trips	Percent- age of trips	Number of trips	Percent- age of trips
0	582	64.1	294	58.3
1	123	13.5	87	17.2
2	77	8.5	47	9.3
3	50	5.5	31	6.1
4	24	2.6	17	3.4
5	25	2.8	29	5.7
6	9	1.0	...	...
7	9	1.0	...	...
8	5	0.6	...	...
9	1	0.1	...	...
10	3	0.3	...	...
Totals	908	100.0	505	100.0

¹ Experimental section of Hunt Creek, also Fuller Creek.

² East Fish Lake, Fuller Pond.

15.2 percent of the trips anglers caught 3 or more trout per trip and these trips accounted for 62.8 percent of the trout caught. Anglers catching 1 or 2 trout per trip made 26.5 percent of the trips. No trout were caught on 58.3 percent of the trips.

Age composition of wild trout in the catch

The age composition of the wild brook trout taken from the Area waters is summarized in Table 10. Separate tabulations were made for trout creel in Sections Z and A and in Sections B, C, D and Fuller Creek.

The age composition (percentage of catch in various age groups) from Sections Z and A was: I's--3.4; II's--76.5; III's--19.3; and IV's--0.8.

From Sections B, C, D and Fuller Creek, age-groups percentages were: I's--5.0; II's--64.5; III's--30.0; and IV's--0.5.

In general, about two thirds of the stream trout caught are II's (third summer fish); one third III's and the few I's and IV's make up only a small part of the catch.

The age distribution (percentage) of wild brook trout from pond waters (East Fish Lake and Fuller Pond) was: I's--2.4; II's--64.3; III's--26.2; and IV's--7.1.

In general, pond trout are larger for a given age than stream trout. For both stream and pond waters the youngest trout represented in the catch are the fast-growing individuals of their particular year class and the oldest age trout are generally slow-growing trout of their year class.

Table 10.--The age distribution of wild brook trout caught by anglers in experimental waters, 1961

Stream section	Age group	Number of fish	Average length (inches)	Percentage of total catch
Z + A	I	12	7.2	3.4
	II	270	7.5	76.5
	III	68	8.1	19.3
	IV	3	9.2	0.8
	Total	353	...	100.0
B, C, D and Fuller Creek	I	20	7.3	5.0
	II	256	7.7	64.5
	III	119	8.1	30.0
	IV	2	8.8	0.5
	Total	397	...	100.0
East Fish Lake and Fuller Pond	I	1	10.1	2.4
	II	27	10.8	64.3
	III	11	11.0	26.2
	IV	3	11.3	7.1
	Total	42	...	100.0
All waters	I	33	...	4.2
	II	553	...	69.8
	III	198	...	25.0
	IV	8	...	1.0
	Total	792	...	100.0

Residence of anglers

The residence of the anglers making the 1,413 trips to the Area is summarized by county and by state in Table 11. Thirty-five counties of the Lower Peninsula and four states were represented. About 23 percent of the anglers were from Montmorency and adjacent counties. Thirty percent of the anglers were from the metropolitan area of southeastern Michigan. About 22 percent of the anglers came from the Saginaw-Bay City-Midland triangle. Eight percent of the anglers were non-residents.

Types of fishing gear used

The various types of fishing gear used by anglers at the Area during 1961 are listed in Table 12. The categories are based primarily on the type of reel used in conjunction with various rods. For example, a fly rod used with a spinning reel was classed as spinning gear; a spinning rod with a single-action fly reel was listed as fly-fishing gear. Most of the anglers fishing stream sections used fly-fishing tackle, whereas more anglers used spinning gear on pond waters.

INSTITUTE FOR FISHERIES RESEARCH

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Table 11. --Residence of anglers fishing experimental waters of Hunt
Creek Trout Research Station, 1961

Residence (County)	Number of trips	Residence (County or state)	Number of trips
Montmorency	317	Eaton	7
Wayne	235	Jackson	5
Bay	139	Manistee	5
Genesee	114	Gratiot	4
Oakland	113	Iosco	4
Ingham	66	Mecosta	4
Washtenaw	52	Alpena	3
Macomb	36	Ionia	3
Midland	30	Otsego	3
Saginaw	25	Branch	2
Livingston	21	Gladwin	2
St. Clair	21	Ogemaw	2
Monroe	14	Kalamazoo	1
Shiawassee	13	Presque Isle	1
Oscoda	11	<u>Total</u>	<u>1,306</u>
Huron	10	Ohio	83
Arenac	9	Florida	12
Lenawee	9	Indiana	9
Tuscola	9	<u>Illinois</u>	<u>3</u>
Kent	8	<u>Total</u>	<u>107</u>
Lapeer	8	Grand total	1,413

Table 12. --Type of fishing gear used in the experimental waters of
Hunt Creek Area, 1961

Experimental water	Trips using type of gear						Total trips
	Fly	Spin- ning	Cast- ing	Cane pole	Combi- nation	Unknown	
Streams (Sections A, B, C, D, Z stream and Fuller Creek)	550	268	70	13	3	4	908
Ponds (Fuller Pond and East Fish Lake)	80	316	68	0	36	5	505
Totals	630	584	138	13	39	9	1,413