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Inst. for Fish. Res.
M. J. Whalls
C. T. Yoder
Hunt Creek Fish. Exp. Sta.
D. S. Shetter

INSTITUTE FOR FISHERIES RESEARCH
DIVISION OF FISHERIES
MICHIGAN DEPARTMENT OF CONSERVATION
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ALBERT S. HAZZARD, PH.D.
DIRECTOR

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THE SEVENTEENTH ANNUAL INTENSIVE CREEL CENSUS,
HUNT CREEK FISHERIES EXPERIMENT STATION, 1955

By Marvin J. Whalls and David S. Shetter

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Introduction

Hunt Creek, Montmorency County, flows from Harders Lake north-eastward approximately 10 miles into the Thunder Bay River. The waters of the Experiment Station are located in a four-square-mile area on the upper reaches of Hunt Creek (Fig. 1). The average daily flow at the downstream boundary of the experimental waters is 23.7 cubic feet per second.

Angling on the Hunt Creek Fisheries Experiment Station waters was censused intensively in 1955 for the seventeenth consecutive year. Experimental waters included in the 1955 census were: Hunt Creek, Fuller Creek, Fuller Creek Pond, and East Fish Lake. Dimensions of these waters are listed in Table 1.

Methods

Angling was controlled by the permit system. Anglers who fished on the area first stopped at a centrally located checking station, where they were briefed on the area regulations and on information desired on their fishing trips, and were issued a one-day permit.

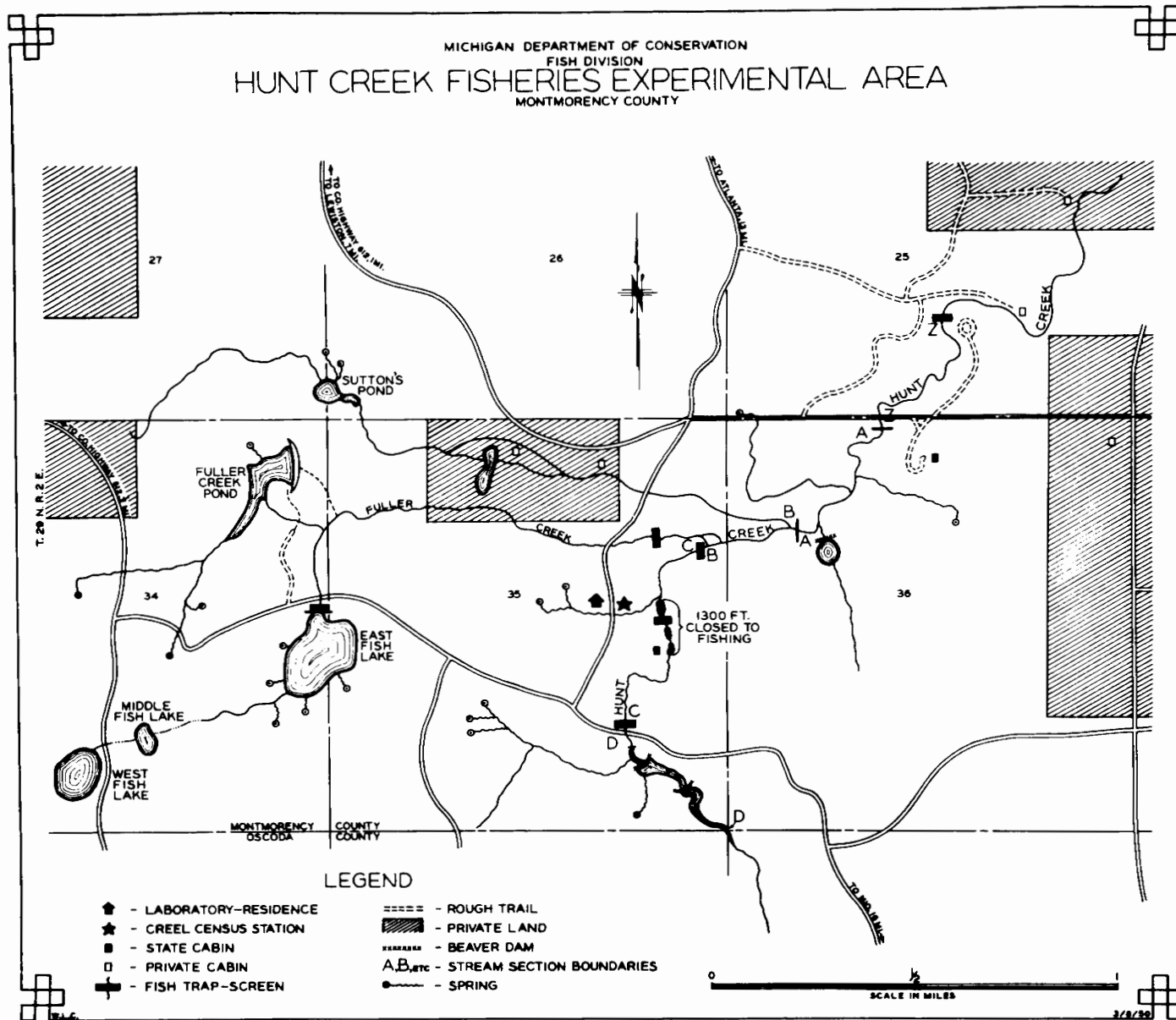


Figure 1

Table 1.--Dimensions (mileage in parentheses) of experimental waters on Hunt Creek drainage, with angling regulations for 1955

Experimental water Section of Hunt Creek	Dimensions			1955 Regulations		
	Length (feet)	Average width (feet)	Area (acres)	Lure	Minimum length (inches)	Daily creel limit
Z	2,397 (0.45)	20.3	1.12	Flies only	7	10
A	2,577 (0.49)	24.3	1.44	Flies only	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)	50.0	3.11	Any	7	10
Total, Hunt Creek	12,175 (2.30)	25.1	7.02			
Fuller Creek	9,875 (1.87)	15.7	3.57	Any	7	10
Fuller Creek Pond	.... ....	....	14.58	No live minnows	10	5
East Fish Lake	.... ....	....	16.00	No minnows	10	5

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

The data listed are from a 1949 survey. Beaver activities have increased the average width and area slightly.

At the conclusion of the trip, they reported back to the checking station. As in past years, the experimental waters were posted at all boundary and access sites to aid anglers in reporting their fishing results. Tabulations and routine calculations were made with International Business Machines Corporation equipment.

Stocked and transferred trout recovered by fishermen

On October 22, 1952, 3,000 sublegal rainbow trout were stocked in Sections Z, A, B, and C of Hunt Creek. (Planting and recovery records for all waters are listed in Table 2.) These trout were planted to compare the survival of jaw-tagged, fin-clipped, and unmarked fish of similar size in the same habitat. Twelve were caught in 1955 for a total recovery to date of 296 (10 percent). These fish spawned successfully on the area during the spring of 1955, and young were taken in the September, 1955, population studies.√ It was estimated that 66 to 113 fingerlings and 7 to 27 adults were present in September.

On April 10, 1953, 916 sublegal brook trout were planted in Fuller Creek and in Section D of Hunt Creek to determine the length of time required for sublegal trout of known size to reach the legal length of 7 inches, and to determine the relative effect on growth and survival, of jaw-tags and amputated fins. Two were caught in 1955, for a total recovery to date of 191 (21 percent). None were captured during the September population study.

√Hunt Creek population estimates were made by the mark-and-recovery method during the period of September 19 to 23, 1955. The fish were captured by electrofishing.

Table 2.--Fish planted (1952-1955) or transferred (1950-1952)
in the experimental waters of Hunt Creek Station, and anglers' harvest

Area and date	Species	Number	Total length in inches (average or (range))	Number Creeled, 1955	Total legal fish creeled to date	Number percentage
Hunt and Fuller Creeks						
Oct., 1952	Rainbow	3,000	2.8-5.0	12	296	10
Apr., 1953	Brook	916	4.7-6.5	2	191	21
Aug., 1953	Brook	400	8.1	0	316	79
Apr., 1954	Brook	400	7.1	2	234	59
Oct., 1954	Brook	5,997	4.3	41	41	1
May, 1955	Brook	378	7.0-7.9	234	234	62
East Fish Lake						
Nov., 1950	Brook	500	3.6	2	24	5
Nov.-Dec., 1951	Brook	1,001	3.1	1	45	4
Sept., 1952	Brook	1,032	3.1	7	15	1
Nov., 1952	Brook	1,007	5.8	1	29	3
Aug., 1953	Brook	650	8.1	5	35	5
Apr., 1954	Brook	600	7.1	18	26	4
Oct., 1954	Brook	9,745	4.1		0	
Fuller Creek Pond						
Oct., 1954	Brook	4,366	4.1		0	

✓ Data from Fish Planting Record, Michigan Department of Conservation, 1953 or 1954.

✓ Trout transferred from Hunt Creek to East Fish Lake.

✓ Three planted trout in addition to those listed were taken by anglers in 1955. These fish could not be assigned to a specific planting because of fin regeneration or improper clipping.

On August 26, 1953, Sections Z, A, B, and C of Hunt Creek were planted with 400 legal brook trout. These fish were stocked as part of an experiment conducted by the Department of Conservation and Psychological Research Services (hereafter termed PRS). None of these fish were creeled in 1955, although 316 (79 percent) were caught in 1953 and 1954. None were taken in the September population study.

In April, 1954, another group of 400 PRS legal brook trout were planted in Sections Z, A, B, and C of Hunt Creek. Two of these fish were caught in 1955, for a total recovery to date of 234 (59 percent). None were taken in the September population study.

In October, 1954, 5,997 fingerling PRS brook trout were stocked in Sections Z, A, B, C, and D. To date 41 (about 1 percent) have been caught. It was estimated that 475 of these fish remained in Sections Z, A, B, and C in September, 1955. No population study was made in Section D.

In May, 1955, Sections Z, A, B, and C were again planted with 378 legal PRS brook trout. Of these, 234 (62 percent) were caught during the 1955 season. Approximately 29 remained in the stream at the time of the population study.

In November, 1950, 500 wild fingerling brook trout were transferred from Hunt Creek to East Fish Lake to supplement natural reproduction and for experimental purposes. Two of these were creeled in 1955 and 22 were taken in previous years, for a total angling recovery to date of 5 percent. Another planting of 1,001 wild brook trout fingerlings from Hunt Creek was made in the lake in November and December, 1951. Only one of these entered the 1955 creel, for a total of 45 (4 percent) to date.

In September, 1952, East Fish Lake was again planted with 1,032 wild Hunt Creek fingerlings. In 1955, seven were creeled, making a total recovery to date of 15 fish, or 1 percent. In November, 1952, 1,007 fingerling hatchery brook trout were planted to compare the rates of return from wild and hatchery fish. One was creeled in 1955, for a total return to date of 29 (3 percent). Thus, returns from both the hatchery planting and from wild transferred fish have been poor. Few additional recoveries are expected. The difference in rate of recovery between the two groups cannot be regarded as significant because the larger size of the hatchery fish at the time of planting undoubtedly contributed to their slightly higher rate of return.

In August, 1953, 650 PRS hatchery brook trout were released in East Fish Lake. None of these fish entered the 1953 catch because of their small size and the lateness of the planting; 30 were taken in 1954, and five in 1955 for a total recovery to date of 5 percent. In April, 1954, another group of 600 PRS hatchery brook trout were liberated in the lake. Eight were creeled in 1954 and 18 in 1955 (total recovery, four percent). Later, in October, 1954, 9,745 PRS hatchery brook trout fingerlings were stocked in East Fish Lake. None have been caught.

At the time of the population study[✓] in October and November of 1955, it was estimated that 1,258 to 1,338 brook trout remained in East Fish Lake. Of the 566 fish marked in the study, 542 were from the October, 1954, planting and 24 from the wild population and other plantings.

[✓]East Fish Lake population estimates were made by the mark-and-recovery method, utilizing the Schumacher-Eschmeyer formula. The fish were captured in trap nets between October 6 and November 4, 1955.

Fuller Creek Pond was planted with 4,366 PRS fingerlings in October of 1954. None have entered the catch.

Fishing permits and violations

Anglers who fished the experimental waters of the Hunt Creek area in 1955 were issued 933 permits, representing 744 trips by licensees, 82 trips by licensees' wives, and 107 trips by minors under 17 years old.

Three anglers failed to return to the checking station upon the completion of their angling trips. Each was later apprehended by a Conservation Officer and data on their fishing trips were included in this report. Six other violations were detected during the year. Each of these occurred in Section Z of Hunt Creek when anglers failed to obey the flies-only regulation.

Some illegal trout were creeled in the several experimental waters (Table 3). All of these were near legal size and had possibly shrunk between the time they were caught and the time they were examined by the census clerk. Anglers were permitted to keep their short trout except when a deliberate violation was suspected.

Angling results

Hunt Creek.--In the following report on the creel census for Hunt Creek, results are considered separately for each of the five experimental sections, proceeding from Section Z (the farthest downstream) to Section D (the farthest upstream). These are followed by a summary for all sections combined. The data are summarized in Tables 3 and 4. Angling statistics for all sections for the years 1949-1955 are listed in Table 5. Tables 5,

Table 3.--Summary of angling statistics, experimental waters
of Hunt Creek drainage, 1955

Experimental water	Total fishing		Fish Caught				Catch per hour		Average Size		
	Trips	Hours	Species	Origin	Number		Number	Pounds	Total length (inches)	weight (pounds)	
					Legal	Sublegal					
Section of Hunt Creek											
Z	139 (72)	293.0	Brook	Wild	198		29.42	0.68	0.10	7.6	0.15
			Brook	Hatchery	56		7.51	0.19	0.13	7.4	0.13
			Rainbow	Hatchery	1		0.30	✓	✓	9.7	0.30
			All	All		6	0.71	✓	✓	6.9	0.12
A	115 (66)	269.0	Brook	Wild	159		23.92	0.59	0.09	7.6	0.15
			Brook	Hatchery	77		10.13	0.29	0.04	7.4	0.13
			Rainbow	Hatchery	1		0.40	✓	✓	10.9	0.40
			All	All		3	0.31	✓	✓	6.9	0.10
B	50 (24)	97.0	Brook	Wild	43		6.53	0.44	0.07	7.7	0.15
			Brook	Hatchery	14		1.87	0.14	0.02	7.3	0.13
			All	All		1	0.11	✓	✓	6.9	0.11
C	270 (94)	592.5	Brook	Wild	156		25.69	0.26	0.04	7.8	0.16
			Brook	Hatchery	94		12.68	0.16	0.02	7.3	0.13
			Rainbow	Hatchery	10		3.29	0.02	0.01	9.9	0.33
			All	All		3	0.32	✓	✓	6.9	0.11
D	267 (85)	563.0	Brook	Wild	150		38.03	0.27	0.07	8.6	0.25
			Brook	Hatchery	35		6.02	0.06	0.01	7.7	0.17
			All	All		3	0.35	✓	✓	6.9	0.12
Hunt Creek Totals or averages	841 (341)	1,814.5	Brook	Wild	706		123.59	0.39	0.07	8.0	0.18
			Brook	Hatchery	276		38.21	0.15	0.02	7.4	0.14
			Rainbow	Hatchery	12		3.99	0.01	✓	10.0	0.13
			All	All		16	1.79	✓	✓	6.9	0.11
Fuller Creek	110 (34)	213.5	Brook	Wild	68		9.65	0.31	0.04	7.6	0.14
			Brook	Hatchery	3		0.36	0.02	✓	7.2	0.13
			All	All		2	0.22	✓	✓	6.9	0.11
Fuller Creek Pond	37 (6)	142.5	Brook	Wild	13		6.73	0.09	0.05	11.0	0.52
			All	All		1	0.33	✓	✓	9.8	0.33
East Fish Lake	230 (37)	902.5	Brook	Wild	2		0.95	✓	✓	11.0	0.48
			Brook	Hunt Creek	10		7.27	0.01	0.01	12.6	0.73
			Brook	Hatchery	27		15.68	0.03	0.02	11.8	0.58
			All	All		8	0.85	✓	✓	6.4	0.11

✓Numbers of successful fishing trips in parentheses.

✓Less than 0.005.

Table 4.--Semimonthly angling statistics, Sections Z, A, B, C, and D
of Hunt Creek (combined), 1955

Dates	Total fishing		Native Trout		Catch per hour		Average Size	
	Trips [✓]	Hours	Number	Weight (pounds)	Number	Pounds	Total length (inches)	Weight (pounds)
April 30-May 13	137 (44)	268.0	148	23.59	0.55	0.09	7.7	0.16
May 14-May 27	68 (34)	142.0	61	9.55	0.43	0.07	7.7	0.16
May 28-June 10	129 (65)	325.5	120	21.79	0.37	0.07	8.0	0.18
June 11-June 24	73 (39)	173.5	79	12.30	0.46	0.07	7.6	0.16
June 25-July 8	95 (35)	222.5	67	9.85	0.30	0.04	7.6	0.15
July 9-July 22	77 (39)	163.5	79	20.10	0.48	0.12	8.6	0.25
July 23-Aug. 5	110 (29)	212.0	43	7.68	0.20	0.04	8.0	0.18
Aug. 6-Aug. 19	53 (20)	103.5	39	6.54	0.38	0.06	7.8	0.17
Aug. 20-Sept. 2	52 (22)	108.5	42	7.62	0.39	0.07	7.8	0.18
Sept. 3-Sept. 11	47 (14)	95.5	28	4.57	0.29	0.05	7.7	0.16
Total, Average Wild brook trout	841 (341)	1,814.5	706	123.59	0.39	0.07	8.0	0.18
Hatchery brook trout			276	38.21	0.15	0.02	7.4	0.14
Hatchery rainbow trout			12	3.99	0.01 [✓]	10.0	0.33

[✓]Numbers of successful fishing trips in parentheses.

[✓]Less than 0.005.

Table 5.--Legal wild brook trout caught in Hunt Creek, 1939-1955

Experimental area and year	Total fishing		Total Catch		Catch per hour		Average size	
	Trips	Hours	Number	Pounds	Number	Pounds	Length (inches)	Weight (pounds)
Sec's. A, B, C, and D								
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
Average	565	1,074	453	76	0.42	0.07	....	....
Section Z								
1949	165	375	186	28	0.50	0.07	7.6	0.15
1950	164	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
Average	196	491	173	26	0.35	0.05	....	....

Table 5a.--Legal wild brook trout caught in Fuller Creek, 1940-1955, and in Fuller Creek Pond, 1939-1955

Experimental area and year	Total fishing		Total Catch		Catch per hour		Average size	
	Trips	Hours	Number	Pounds	Number	Pounds	Length (inches)	Weight (pounds)
Fuller Creek								
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	296	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
Averages	104	173	44	7	0.25	0.04	....	....
Fuller Creek Pond								
1939	112	250	155	88	0.62	0.35	10.6	0.54
1940	65	144	88	37	0.61	0.26	9.7	0.42
1941	26	50	57	14	1.14	0.28	8.6	0.35
1942	10	12	6	1	0.50	0.08	8.5	0.21
1943	4	8	14	2	1.75	0.25	7.6	0.13
1944	4	6	33	5	5.50	0.83	7.5	0.14
1945 Pond reverted to stream condition. New dam completed May, 1949								
1949	2	16	5	2	0.31	0.13	9.1	0.30
1950	136	430	343	109	0.80	0.25	9.3	0.32
1951✓	65	165	22	12	0.13	0.07	11.0	0.53
1952	88	239	43	24	0.18	0.10	11.3	0.56
1953	60	172	33	20	0.19	0.12	11.6	0.62
1954	67	182	15	10	0.08	0.05	11.5	0.60
1955	37	143	13	7	0.09	0.05	11.0	0.52
Average	52	140	64	25	0.46	0.18	....	....

✓Period from 1945-48 includes anglers' results on Fuller Creek Pond which had reverted from pond to stream habitat.

✓Size limit changed from 7 to 10 inches and daily creel limit reduced from 10 to 5 trout, effective at opening of 1951 season.

Table 5b.--Legal wild brook trout caught in East Fish Lake, 1939-1955

Year	Total fishing		Total Catch		Catch per hour		Average size	
	Trips	Hours	Number	Pounds	Number	Pounds	Length (inches)	Weight (pounds)
1939	63	126	51	....	0.40	....	....	....
1940	111	308	44	....	0.14	....	....	....
1941	156	386	71	11	0.18	0.03	7.4	0.15
1942	159	289	34	10	0.12	0.03	9.1	0.29
1943	121	200	68	26	0.34	0.13	9.3	0.37
1944	311	651	105	79	0.16	0.12	11.2	0.75
1945	436	928	158	131	0.17	0.14	11.9	0.83
1946	430	935	92	69	0.10	0.07	11.5	0.76
1947	344	711	89	54	0.13	0.08	11.1	0.61
1948 ¹	287	853	113	56	0.13	0.07	10.4	0.49
1949	287	1,040	93	71	0.09	0.07	11.5	0.76
1950	218	613	47	39	0.08	0.06	12.3	0.82
1951 ²	200	732	56	36	0.08	0.05	11.9	0.64
1952	174	596	24	16	0.04	0.03	12.3	0.65
1953	125	446	16	11	0.04	0.02 ³	12.6	0.70
1954	264	940	7	4	0.01	....³	12.0	0.54
1955	230	902	2	1	....³	....³	11.0	0.48
Averages	230	627	63	41	0.10	0.06	....	....

¹Creel limit changed from 10 to 5 trout per day.

²Size limit changed from 7 to 10 inches effective at opening of 1951 season.

³Less than 0.005.

5a, and 5b have been corrected and replace the information given in a similar table in the 1953 and 1954 Hunt Creek creel census reports (Institute for Fisheries Research Report Nos. 1425 and 1444). These tables were corrected by subtracting legal fish returned to the water, which were included in total catch in past reports. Also, hatchery fish that had been included by mistake were deleted from the total catch.

Section Z is the lowermost experimental section of Hunt Creek (Fig. 1). It is easily waded and fished and is accessible from many points. For the most part its banks and edges are not obstructed by foliage so the section is well suited to fly fishing.

In 1955, a flies-only regulation was in effect on Section Z to determine whether protection given to sublegal fish against bait-hooking mortalities would increase the total catch of brook trout. The new regulation apparently caused a reduction in fishing intensity. For the six years prior to 1955 an average of 206 angling trips were made to the section each season, but in 1955 only 139 trips were made. When anglers were told at the checking station that Section Z was open to fly fishing only, many changed their intentions in favor of bait waters. On the other hand, several typical bait anglers purchased fly lures and fished the section with good results.

Fishing success was high in Section Z. Of the 139 trips, 52 percent were successful. Anglers fished for 293 hours to creel 255 legal trout (1.15 hours per fish). In addition to legal fish, six sublegal trout were creeled and 1,035 were released.

At the conclusion of the September population study, an estimated 1,471 sublegal and 106 legal trout remained in Section Z. These included 1,276 sublegal and 88 legal wild brook trout, 1955 sublegal and 17 legal PRS hatchery brook trout, and 1 legal hatchery rainbow trout. No young-of-the-year rainbow trout were taken in the section.

Section A, immediately upstream from Section Z, is typified by its open-marsh setting. It is excellent for fly fishing and was under the flies-only regulation.

During the 1955 season, anglers made 115 trips to Section A (compared to an average of 92 in 1949-1954) and caught 237 trout in 269 hours. Fifty-seven percent of the trips were successful; 1.14 hours of fishing were required to creel one trout. In addition to the catch of legal trout, 3 sublegal trout were creeled and 1,085 were released.

At the completion of the season an estimated 2,662 sublegal and 123 legal trout remained in Section A. These included 2,563 sublegal and 105 legal wild brook trout, 88 sublegal and 17 legal PRS hatchery brook trout, and 11 sublegal wild fingerlings and one legal adult hatchery rainbow trout.

Fly fishing was more difficult in Section B (immediately upstream from Section A) than in the two lower sections because it has more woody vegetation along its swampy banks. Bait was the favorite lure. Regulations were identical with those in most other waters in the state--any lure, 7-inch minimum size, and 10 trout per day.

Anglers made 50 trips to Section B in 1955 and caught 57 trout in 97 hours (1.69 hours per fish). Forty-eight percent of all trips were successful. A total of 439 sublegal fish were released; 1 was creeled.

The September population study indicated that 1,208 sublegal and 32 legal trout remained in the section at the close of the season, divided as follows: 1,146 sublegal and 30 legal wild brook trout, 49 sublegal and 1 legal PRS hatchery brook trout, and 13 sublegal wild fingerlings and 1 legal hatchery rainbow trout.

Section C, immediately upstream from Section B, flows through a swamp habitat in the lower one-quarter of its course. The middle half flows over a channel surrounded by low hills and the upper one-quarter flows through a V-shaped valley. Cover is heavy throughout this section, so bait was most commonly used.

Section C anglers made 270 trips to creel 260 legal trout in 592.5 hours (2.27 hours per fish); 35 percent of these trips were successful. Three sublegal trout were creeled and 1,555 were released.

September population estimates in the section indicated that 2,437 sublegal and 81 legal trout remained after the season; 2,244 sublegal and 69 legal wild brook trout, 135 sublegal and 6 legal PRS hatchery brook trout, and 58 sublegal wild and 6 legal hatchery rainbow trout.

Section D, directly upstream from Section C and separated from it by a concrete bulkhead containing two-way fish traps, is a beaver pond habitat. Area anglers made 267 trips to this section in 1955 to creel 185 legal trout. Three sublegal trout were kept and 872 were released. No population study was made in Section D because of the difficulty in obtaining a valid estimate with either the electric shocker or available nets.

Several breaks occurred during the 1955 season in the large (Number 3) beaver dam located in Section D. Before daybreak on April 30, the opening day of the season, this dam erupted and a 26-inch layer of water hurtled down through the confining channel. The water spread out and decreased in velocity upon reaching the concrete bulkhead at the lower end of the stream section; still, a three-inch layer of water overtopped the bulkhead and damaged the fish traps. Although the beaver began to repair the dam immediately, the water below was roily for several days and interfered with fishing. On May 1, 1955, the same dam failed again, but the release of water was gradual this time and no damage occurred.

During the morning of June 5, 1955, a 12-foot section of Number 3 dam collapsed, allowing a large volume of water to go roaring down the section. The bulkhead at the lower end of the section was flooded by water to a depth of 26 inches above the bulkhead and to a width of 60 feet. Number 1 dam, below Number 3, was completely washed out and the fish traps at the bulkhead were smashed and carried downstream along with a great amount of debris. This time, the beaver pond was drained to its old level. By June 11 the beaver had nearly completed repairs on the dam and the water was close to its normal level.

On September 28, Number 3 dam broke again, but the water was released slowly, with less destruction than on previous occasions. The debris picked up by the excess water plugged the screens in the fish traps, however, and 12 inches of water flowed over the top of the bulkhead. By November 17, the water level in the beaver pond was still two feet below its normal level.

There are two possible explanations for the repeated failure of dam Number 3 in 1955. Seepage past a 14-foot log, 5 inches in diameter, which was lodged in the lower one-half of the dam, below water level, could have "triggered" a break. This log was held responsible for the first failure, on April 30. A second possibility is that muskrats (known to be present in the beaver pond) burrowed through the dam, causing its weakening and eventual breakage.

Angling records for the combined Sections Z, A, B, C, and D of Hunt Creek, by semimonthly periods are summarized in Table 4. Only wild legal-size brook trout are included in the main body of the table to make comparisons with past years possible. As is usually true, fishermen were able to catch the most fish in the shortest time during the first two-week period, when they made 137 trips to creel 148 fish in 268 hours, or one fish each 1.8 hours. Thereafter, the catch per hour declined slightly but remained fair.

When the same data for the years 1951-1955 were grouped, it was evident that fishing quality was best during the first two biweekly periods. By semimonthly periods the average catch-per-hour figures were: 0.42, 0.42, 0.37, 0.36, 0.39, 0.34, 0.24, 0.34, 0.32, and 0.30. In general, the first two biweekly periods were best, followed by a slight decline.

In general, for any period during the season, and with only minor fluctuations in the number of legal fish available to anglers, the catch per hour decreased and the number of trout creeled increased with an increase in the number of angling trips and hours. The reverse applied when angling trips and hours decreased.

As a total for Sections Z, A, B, and C (4.27 acres), the estimated number of trout remaining at the end of the season was 7,778 sublegals and 342 legals (1,822 sublegals and 80 legals per acre). This number is relatively high, indicating no over-exploitation in 1955.

Fuller Creek and East Fish Lake outlet.--Fuller Creek originates about 0.5 mile west of Fuller Creek Pond. Its channel runs through the Pond, flows 812 feet to the southeast, where it is joined by the outlet of East Fish Lake, and then travels east through a swamp to unite with Hunt Creek at the upper end of Section B (Fig. 1). Fuller Creek is bait-fishing water.

Anglers made 110 trips to Fuller Creek and East Fish Lake outlet to creel 71 legal trout in 213.5 hours of angling. The average angler was successful in 31 percent of these trips, and creeled 1 trout for each 1.41 hours of effort. Two sublegals were creeled, and 668 were released. No population studies were made on Fuller Creek. The creel census for 1940-1955 is summarized in Table 5a.

Fuller Creek Pond.--Fuller Creek Pond is located in the upper reaches of Fuller Creek. This tree-studded pond was originally built by beaver, but is now maintained by an earthen dam.

Thirty-seven fishing trips were made to the pond in 1955 to creel 13 brook trout (10 inches or more in length) in 142.5 hours. Eleven hours of effort were necessary to catch one trout and only 16 percent of the trips were successful. One sublegal trout was creeled and 181 were returned to the pond.

Fishing in Fuller Creek Pond has declined and steps toward improving it are planned. At present most of the water entering the pond does not pass through the entire pond before continuing down Fuller Creek. This allows the standing water in the pond to warm close to or beyond the tolerance limit of trout, encourages the collection of debris in the quiet area, and is conducive to the propagation of rough and forage species of fish. The pond now has a large population of white suckers, creek chubs, and red-belly dace.

In the spring of 1956, a galvanized pipe 17 inches in diameter and with a gate valve will be installed in the earthen dam to create a new outlet. Eventually, it is hoped that the present outlet will be filled and blocked so that all water will travel the entire length of the pond before entering Fuller Creek. After this pipe has been installed, the pond will be drained to its former stream level, treated with rotenone, and permitted to remain at the low level for at least one year. The oxygenation of the bottom soils, plus the elimination of unwanted fish species should increase the brook trout production in this water in future seasons. The pond will be drained at periodic intervals to determine if a high level of brook trout production can be so maintained.

East Fish Lake.--East Fish Lake, a 16-acre temperate lake, has a maximum depth of 40 feet and an average depth of nearly 20 feet.

Potentially, it is an ideal trout lake. However, for the past few years it has not yielded a good harvest of brook trout. Competition from rough fish, reduced spawning success (which necessitates stocking), and overstocking are probably responsible for the poor fishing.

Anglers made 230 trips to the lake in 1955 to creel 39 brook trout, 40 creek chubs, and one white sucker in 902 hours of angling. Brook trout were caught on only 16 percent of the trips, and 23.13 hours were required to catch one brook trout. One sublegal brook trout was creeled and 1,005 were returned to the lake. In addition, a staff member removed 7 small trout (with hook and line) for stomach samples. Tables 3 and 5b list detailed records.

Sampling with gill nets which began in August of 1955, accounted for the removal of 36 brook trout (3 wild fish, 13 Hunt Creek transfers, 20 PRS hatchery fish), 16 white suckers and 9 creek chubs. The total weight of the brook trout was 15.5 pounds (excluding two trout not weighed). The white suckers totaled 7.9 pounds and the creek chubs 1.2 pounds (two suckers and two chubs were not weighed).

The 1955 population study on East Fish Lake indicated that 1,258 (\pm 40) brook trout remained in the fall, of which 1,215 were PRS trout from the 1954 October planting. No estimate was made of the wild fish and other planted fish due to the small numbers handled in the study.

On March 20, 1955, a 3.8-inch PRS brown trout entered the outlet weir of the lake. It was destroyed.

All waters.--In all streams and ponds of the Hunt Creek Experimental Area, anglers made 1,218 trips in 1955, and fished 3,072.5 hours to creel 1,144 legal and sublegal trout, whose total weight was 209.3 pounds; 6,840 sublegal trout were released.

Fishing techniques

Comparison of fly and bait fishing.--In 1955, for the fourth consecutive year, stream and pond creel records were separated and success of bait and fly fishermen was compared. The waters were divided according to habitats and fishing methods. Stream habitats included Sections Z, A, B, and C of Hunt Creek, and Fuller Creek; pond waters were East Fish Lake, Fuller Creek Pond, and Section D of Hunt Creek.

The test of relative success among fly, bait, and combination lure fishermen is not represented as being a valid test of fishing methods. It is more a test of angler success due to fishing ability than of angler success because of fishing technique. It has been observed that fly fishermen using the Hunt Creek area are, on the average more skillful and experienced than bait fishermen. We can state, therefore, (as shown below) that fly fishermen were more successful than bait fishermen but we cannot state that they were more successful simply because they used fly-fishing techniques.

The stream records indicate that anglers fishing with fly lures were significantly more successful than those using bait lures, but revealed no difference between fly and combination lures (Table 6). There was an indication that anglers employing combination lures were more successful than anglers using only bait.

A review of the stream data on catch per hour per trip for 1952-1955 indicates that the fly fishermen were consistently more successful in creeling fish than bait fishermen (significantly more successful in 1952, 1953, and 1955); that fly anglers usually were more successful than anglers who switched between bait and flies; and that bait fishermen had as much success as combination lure anglers.

Table 6.--Comparison of bait and fly fishing in Hunt Creek experimental waters, 1955

Water	Lure [✓]	Total fishing		Total Catch				
		Trips	Hours	Number	Number per hour	Number-per-hour-per-trip Average	Standard error	Number successful trips
Streams	Flies	282	616.5	504	0.818	0.884	0.079	146
	Bait	373	771.0	308	0.399	0.381	0.040	127
	Combination	27	88.5	69	0.780	0.715	0.162	15
	Total	682	1,476.0	881	0.597	....	....	288
Ponds	Flies	76	165.0	45	0.273	0.283	0.076	18
	Bait	404	1,297.5	167	0.129	0.141	0.019	84
	Combination	54	176.5	25	0.142	0.296	0.157	14
	Total	534	1,639.0	237	0.145	....	....	116

Percentage probability that catch per hour per fishing trip was different when different lures were used (t test)

Percentage probability that number of successful trips was different when different lures were fished (chi-square test)

Streams	Bait	Combination
Flies	99.9+	52.82
Bait	....	95.44
Ponds	Bait	Combination
Flies	43.10	5.92
Bait	....	67.26

Streams	Bait	Combination
Flies	99+	13
Bait	....	96
Ponds	Bait	Combination
Flies	24	7
Bait	....	52

[✓]Categories include flies only, bait (lures other than flies), and combination (both flies and bait).

The Chi-square test of the relative success of fly, bait, and combination lures by number of successful trips indicated that, here, too, fly fishermen did better than bait fishermen, but there was no difference between fly and combination lures as related to successful trips. Combination lures resulted in more successful trips than bait alone.

The pond catch-per-hour-per-trip records for 1955 (as for 1952, 1953, and 1954) indicated no significant difference in angling success between fly, bait, and combination-lure anglers.

Popularity of lures.--Worms were used as bait on 684 (56 percent) of the 1,218 angling trips on the Hunt Creek Experimental Area (Table 7). Every year that such records have been kept at Hunt Creek, the worm has led all other lures in popularity. Flies were used on 358 (29 percent) of the trips and minnows, insects, and other lures on 15 percent.

Hook sizes used.--In 1955, as in 1953 and 1954, a numerical comparison of the use by anglers of hooks of different sizes was made (Table 8). The size-12 hook was used by more fly anglers than any other size, followed by Numbers 14 and 10. The t test of the relative efficiency of the various hooks used by fly fishermen indicated that anglers who used lures tied on size 12 and 14 hooks were most successful, having a 1.01 and 1.06 catch per hour per angler, respectively. In 1954, fly fishermen using hook sizes 12 and 14 also caught more brook trout than fly fishermen using other sizes, but the difference was not statistically significant.

The Number 6 hook was used on the greatest number of worm-angling trips in 1955. The next two most popular sizes were 8 and 4. The majority of the 1954 worm fishermen preferred Numbers 6, 8, and 4, in that order. The t test of success by worm fishermen using various hook sizes indicates that size 6 was an efficient hook but not consistently better than other sizes. In 1954, hook size 12 was the most efficient with worms, but was used on only 18 trips.

Table 7.--Lures used by anglers in 1955

Lure	Streams		Ponds		Combined waters	
	Fishing trips	Percentage of total	Fishing trips	Percentage of total	Fishing trips	Percentage of total
Worms	329	48.1	355	66.5	684	56.1
Flies	282	41.2	76	14.2	358	29.4
Minnows	22	3.2	35	6.6	57	4.7
Insects	18	2.6	3	0.6	21	1.7
Spinning gear	....	....	6	1.1	6	0.5
Artificial lures	4	0.6	5	0.9	9	0.7
Combination	27	4.0	54	10.1	81	6.7
Unknown	2	0.3			2	0.2
Total	684	100.0	534	100.0	1,218	100.0

Table 8.--Angling results for the Hunt Creek Experimental Area (all waters combined), arranged according to hook size and type of lure

Hook size	Flies			Worms			Minnows		
	Number of trips	Number of trout caught	Mean catch per hour \checkmark	Number of trips	Number of trout caught	Mean catch per hour \checkmark	Number of trips	Number of trout caught	Mean catch per hour \checkmark
20	1	....	....	....	....	....	....	....	....
18	1	3	0.75 (....)	2	....	....	....	....	....
16	10	13	0.45 (0.165)	3	....	....	....	....	....
14	84	170	1.06 (0.170)	5	3	0.24 (....)	....	....	....
12	99	199	1.01 (0.141)	15	6	0.15 (0.068)	1	4	1.33 (....)
10	60	48	0.48 (0.123)	57	38	0.25 (0.021)	....	....	....
8	39	45	0.38 (0.146)	158	57	0.12 (0.026)	7	....	....
6	10	17	0.52 (0.186)	275	190	0.33 (0.065)	20	12	0.29 (0.095)
4	5	4	0.27 (....)	128	66	0.20 (0.041)	23	34	0.43 (0.117)
2	....	....	....	14	6	0.33 (....)	4	6	0.72 (....)

Percentage probability that the mean catch per hour per trip was different when different hook sizes were used:

Hook size	16	14	12	10	8	6
Flies	14	98.98	....	....	....	....
	12	99.00	18.18	....	....	....
	10	11.12	99.46	99.52	....	....
	8	25.70	99.78	99.80	39.68	....
	6	22.04	96.76	96.42	14.28	44.46
Worms	10	....	....	84.14	....	....
	8	....	....	31.80	99.99\dagger	....
	6	....	....	94.40	75.78	99.74
	4	....	....	47.12	72.42	90.10
Minnows	4	....	....	....	....	64.74

\checkmark Standard error in parentheses.

In 1955, the minnow fishermen preferred hook sizes 6 and 4. There was no significant difference between the efficiency of these hooks as measured by catch per hour per angler. The 1954 minnow fishermen preferred hooks 10 and 4.

The degree of fishing success as here measured, whether flies, bait, or combination lures were used, probably reflects the skill of the anglers more than the influence of the size of the hook used.

Rough fish removal, East Fish Lake

Rough-fish-removal operations were conducted on East Fish Lake for the fourth consecutive year in 1955. From 1952 to 1954, nets were set throughout the lake, but by 1955 the conclusion that our netting operations were not achieving the desired effect resulted in reduced control efforts. Three years of netting had not reduced the rough fish population sufficiently to be beneficial to the brook trout population. The purpose of the netting in 1955 was to block off the only observed spawning grounds in the outlet bay. We were not completely successful in this operation as a number of creek chubs were observed on the spawning grounds.

On April 10, 1955, the ice was completely out of East Fish Lake; our blocking trap net was set on April 11 and remained in position until June 4. During these 54 days, 407 white suckers (7.5 per day) and 540 creek chubs (10 per day) were captured. Most were mature fish. The average size of the white suckers taken in the spring of 1955 was higher than in other years (Table 9). The mean size of the creek chubs decreased due to the large number of females in the catch. Of the 419 creek chubs sexed, 334 (80 percent) were females, whereas 140 (45 percent) of 312 white suckers were females. Spring netting of rough fish will not be carried on in 1956.

Table 9.--Rough fish netted from East Fish Lake, 1952-1955

Species and date	Days netted	Number of fish caught		Pounds		Average size		Sample size
		Total	Per day	Total	Per acre	Inches	Pounds	
Suckers								
1952 Ap. 23-June 22	60	1,108	18.5	479	29.9	9.2	0.44	1,088
1953 Ap. 13-June 30	77	2,165	28.1	342	21.4	7.1	0.16	2,165
1954 Ap. 13-June 19	67	1,592	23.8	195	12.2	6.9	0.12	1,592
1955 Ap. 12-June 4	54	407	7.5	137	8.6	9.6	0.34	406
1952 Oct. 19-Nov. 5	17	184	10.8	22	1.4	6.6	0.12	184
1953 Oct. 14-Oct. 30	16	171	10.7	25	1.5	7.0	0.14	98
1954 Oct. 7-Nov. 8	32	318	9.9	....	....	....	....	....
1955 Oct. 6-Nov. 4	30	85	2.8	37	2.3	10.6	0.45	83
Chubs								
1952 Ap. 23-June 22	60	448	7.5	32	2.0	5.5	0.07	448
1953 Ap. 13-June 30	77	386	5.0	21	1.3	4.9	0.06	386
1954 Ap. 13-June 19	67	678	10.1	34	2.1	5.0	0.05	678
1955 Ap. 12-June 4	54	540	10.0	30	1.9	4.0	0.06	539
1952 Oct. 19-Nov. 5	17	121	7.1	12	0.8	6.6	0.10	121
1953 Oct. 14-Oct. 30	16	71	4.4	11	0.7	6.1	0.15	23
1954 Oct. 7-Nov. 8	32	362	11.3	....	....	....	....	....
1955 Oct. 6-Nov. 4	30	179	6.0	40	2.5	8.8	0.23	178

A population study of brook trout in East Fish Lake is normally conducted during the months of October and November. Any rough fish entering the nets are destroyed. The 1955 fall netting continued from October 10 to November 4, during which time 85 white suckers and 179 creek chubs were caught. General observations indicate that netting operations for the past four years seem to have had less effect on the population of creek chubs than on the white suckers.

East Fish Lake is scheduled to be treated with rotenone in the fall of 1956 to eliminate all rough fish. The lake will remain fallow overwinter to eliminate gill lice and will then be restocked for the opening of the 1957 season.

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INSTITUTE FOR FISHERIES RESEARCH

Marvin J. Whalls and David S. Shetter

Approved by: G. P. Cooper

Typed by: J. M. Lederer