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MICHIGAN DEPARTMENT OF CONSERVATION
COOPERATING WITH THE
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**THE THIRTEENTH ANNUAL REPORT ON THE RIFLE RIVER AREA,
OGEMAW COUNTY, 1957**

By Mercer H. Patriarche and Howard Gowing

Introduction

The Rifle River Area, is a 4,318-acre wooded tract of land located in the northeast portion of Ogemaw County. It was purchased by the Department of Conservation and first opened to public recreational use in 1945. Six lakes, a number of ponds, and approximately 9.5 miles of stream are within its fenced boundary (Fig. 1). As visitors pass through the single entrance they are given use permits, which they return to the checking station upon leaving. Here pertinent information is recorded on fish or game taken from the Area.

Permits were issued to 21,139 visitors in 1957. Of these, 13,122 (62%) were sight-seers, 4,743 (22%) were fishermen, 3,266 (16%) were hunters, and 8 (less than 0.1%) were trappers. This thirteenth annual report on recreational use of the Area presents primarily the results of the 4,743 fishing trips. Brief summaries of hunting and trapping activities also are included, and fisheries research projects in progress are briefly reviewed.

For the purpose of this report, fishing records are divided by seasons as follows: spring, open-water angling prior to the opening of the bass season (June 15, 1957); summer, June 15 to Labor Day, inclusive; fall, open-water fishing after Labor Day; and winter, fishing through the ice.

MICHIGAN DEPARTMENT OF CONSERVATION
FISH DIVISION
RIFLE RIVER AREA
OGEMAW COUNTY

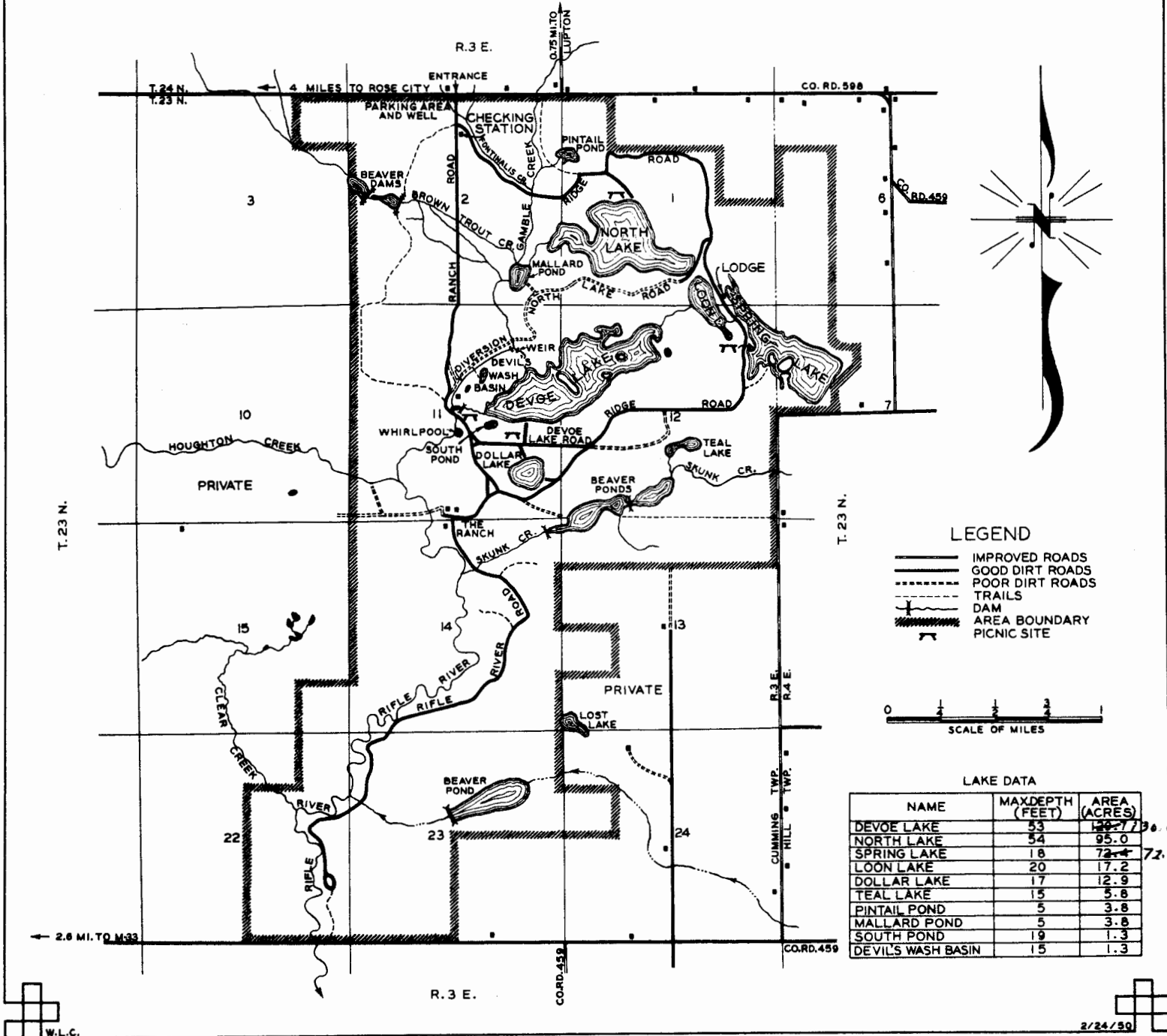


Figure 1

RIFLE RIVER AREA

HISTORY -- This 4,318 acre tract was formerly known as "Grousehaven" when under ownership of H. J. Jewett, pioneer auto maker, who operated it as a private hunting and fishing preserve. In 1945 the Department of Conservation purchased the area with moneys derived from hunting and fishing license sales.

REASONS FOR PURCHASE -- (1) To provide additional public fishing and hunting grounds; (2) to provide a solidly-blocked area of State-owned land where experimental fish and game management might be conducted and accurate records of the results secured.

ADMINISTRATION -- is under the jurisdiction of the Department of Conservation, Fish Division, because of the predominance of fishing values. The Rifle River Area is open daily for public use during all regular fishing, hunting and trapping seasons from daylight to dusk, except from December 1 to the last Saturday in April. In the winter months a sign at the entrance lists the days and hours of access.

EVERYONE MUST REGISTER ON ENTERING AND BEFORE LEAVING -- This requirement simplifies supervision and provides opportunity for creel and game-bag checks. Picnicking is permitted. (See map on reverse side for suggested sites.) Camping is not allowed because suitable sites are relatively scarce; also daily registration and census operations would be made more complex and expensive. Good camping grounds are available on other public areas nearby. The attendant will be glad to suggest such sites. Permission to build cooking fires at designated sites must be obtained from the attendant on duty.

Except as announced by posters or signs, the same general laws applying elsewhere to the use of State-owned land are in effect on the Rifle River Area. The creeland game-bag censuses are taken by technicians of the Fish and Game Divisions, and these data provide a measure of the success of experimental management policies. The other divisions of the Department are consulted on special problems and cooperate in management of the area.

STATISTICS ON USE AND TOTAL FISH, GAME, AND FUR TAKEN FROM THE RIFLE RIVER AREA 1945 THROUGH 1954

	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954
TOTAL PERMITS ISSUED FOR -										
SIGHTSEEING.....	9,993	8,861	10,543	10,627	12,976	12,454	13,074	14,176	13,478	15,364
ANGLING.....	4,080	3,294	3,881	4,176	4,335	5,042	4,514	3,959	5,132	5,812
HUNTING.....	2,257	2,487	2,342	2,134	2,014	2,127	2,037	2,915	5,994	4,021
TRAPPING.....	40	75	52	141	118	86	144	117	88	72
<i>Total Issued.....</i>	<i>16,370</i>	<i>14,717</i>	<i>16,818</i>	<i>17,078</i>	<i>19,443</i>	<i>19,709</i>	<i>19,769</i>	<i>21,167</i>	<i>24,692</i>	<i>25,269</i>
TROUT STREAM DATA										
TOTAL TRIPS.....	1,472	1,427	1,959	2,162	1,778	2,615	2,847	2,218	3,109	3,562
TOTAL FISH.....	446	1,164	1,695	1,533	1,031	1,100	1,502	1,001	2,220	1,923
POUNDS OF FISH.....	222	448	703	529	520	441	703	441	876	939
LAKE FISHING DATA										
TOTAL TRIPS.....	2,608	1,867	1,922	2,014	2,557	2,427	1,667	2,086	2,270	2,511
TOTAL FISH.....	6,192	5,159	4,538	4,042	4,573	8,200	6,479	7,240	7,630	6,308
POUNDS OF FISH.....	2,247	1,524	1,247	1,243	1,750	2,131	1,509	1,672	1,668	1,302
SMALL GAME HUNTING DATA										
TOTAL TRIPS.....	325	284	374	306	435	580	559	1,079	1,095	1,366
TOTAL BIRDS AND ANIMALS.....	91	125	115	132	217	332	254	475	357	189
TOTAL POUNDS.....	142	308	146	235	348	489	403	644	523	... **
DEER HUNTING DATA										
TOTAL TRIPS.....	1,932	2,203	1,968	1,828	1,579	1,547	1,478	1,836	4,882	3,261
TOTAL DEER.....	55	52	48	32	37	40	25	78	145	75
POUNDS OF DEER.....	7,072	6,280	5,498	3,583	3,948	4,350	2,578	7,474	12,369	6,779
TRAPPING DATA										
TOTAL TRIPS.....	40	75	52	141	118	86	144	117	88	72
TOTAL ANIMALS.....	14	172	126	304	79	208	191	255	150	178
POUNDS OF ANIMALS.....	42	394	294	1,249	1,269	689	739	1,122	723	... **
TOTAL POUNDS OF FUR, FISH AND GAME.....	9,725	8,954	7,888	6,839	7,835	8,100	5,932	11,353	16,159	...

* INCLUDES ANTLERLESS DEER TAKEN DURING SPECIAL SEASON.

** ANIMALS TAKEN BY SMALL GAME HUNTERS AND TRAPPERS WERE NOT WEIGHED IN 1954.

RESEARCH AND DEMONSTRATION PROJECTS UNDER WAY

- (1) LAKE FERTILIZATION AND AQUATIC PLANT INCREASE.
- (2) RESULTS FROM PLANTINGS OF TROUT OF VARIOUS SIZES IN STREAMS AND LAKES.
- (3) EVALUATION OF STREAM AND LAKE IMPROVEMENTS, ESPECIALLY THE RIFLE RIVER WATERSHED PROGRAM.
- (4) DETAILED POPULATION STUDIES WITH THE ELECTRIC SHOCKER IN GAMBLE CREEK TO LEARN MORE ABOUT THE CHARACTERISTICS OF A BROWN TROUT POPULATION AND RESULTS FROM PLANTING.
- (5) RECORDING THE ANNUAL CONDITION AND TAKE OF FISH, GAME AND FUR.
- (6) EXPERIMENTAL FOOD AND COVER PLANTINGS FOR SMALL GAME AND BIRDS AND A DEMONSTRATION OF THE EFFECTS OF DEER BROWSING ON CEDAR REPRODUCTION.
- (7) ESTABLISHMENT OF A FLOCK OF CANADA GEESE TO ENCOURAGE LOCAL BREEDING OF THIS SPECIES.
- (8) RELATIONSHIP BETWEEN HUNTING PRESSURE AND RUFFED GROUSE POPULATIONS.

Anglers from 42 of Michigan's 83 counties fished in the Rifle River Area in 1957. Approximately three-fourths of the fishermen were residents of either Ogemaw County or the eastern Michigan metropolitan areas in Wayne, Saginaw, Genesee, Oakland, Bay, and Macomb counties. Most of the out-of-state anglers were from Ohio.

A. W. DeClaire, C. J. Kohn, G. Smith, Jr., and K. R. Sammons assisted in the collection of data. The junior author prepared the section on stream fishing; the rest of the report was prepared by the senior author. Portions of the section on 1957 deer hunting were taken from Game Division Report No. 2174, by L. C. Ruch.

Lake fishing

In 2,040 trips to Area lakes (the lowest fishing pressure since 1952), anglers fished for 5,506 hours and caught 4,906 fish that weighed a total of 1,006 pounds (Table 1). This catch represents 651 more fish, but 57 pounds less weight, than in 1956. Thirty-seven percent (762) of the fishermen caught at least one fish. Devoe Lake, as usual, was fished by the most fishermen, but Dollar Lake and South Pond received the most fishing pressure in terms of hours per acre (86 and 87, respectively). Fishing activity on Loon Lake was greater this year than in any year since 1950. No fish were caught in Spring Lake and the Devil's Wash Basin.

The number and percentage of the various species in the catch are shown in Table 2. Fifty-two percent of the total were bluegills; yellow perch contributed 18 percent and pumpkinseeds 12 percent. Altogether, 15 kinds of fish were caught. The presence of so many hybrid sunfish (194) in the catches in 1957 is undoubtedly the result of an improvement in the ability of the clerks to identify the fish; in past years many hybrids probably were not recognized. The redear sunfish is a newcomer to the Area catch. This species was first stocked in Dollar Lake in 1954 but none were caught prior to 1957.

Table 1.--The fishing pressure, yield, and fishing quality on Rifle River Area lakes in 1957

Lake ¹	Fishing pressure				Yield				Fishing quality	
	Number of fishing trips	Trips per acre	Hours of fishing	Hours per acre	Number of fish	Fish per acre	Pounds of fish	Pounds per acre	Catch per hour per angler	Percentage successful
Devil's Wash Basin	11	8.5	8	6.2	0	...	...	...	...	...
Devoe	747	5.8	2,253	17.3	534	4.1	183.6	1.4	0.28	22
Dollar	441	34.2	1,107	85.8	1,888	146.4	316.9	245.7	1.67	61
Loon	350	20.3	910	52.9	2,176	126.5	392.9	22.8	2.51	70
North	336	3.5	937	9.9	138	1.5	69.9	0.7	0.11	11
South Pond	79	60.8	113	86.9	116	89.2	30.4	23.4	0.72	39
Spring	31	0.4	50	0.7	0	...	...	...	...	...
Teal	45	7.8	128	22.1	54	9.3	12.6	2.2	0.24	20
Total or average	2,040	6.1	5,506	16.4	4,906	14.6	1,006.3	3.0	0.94	37

¹Areas of the different lakes, in acres, are: Devil's Wash Basin, 1.3; Devoe, 130.0; Dollar, 12.9; Loon, 17.2; North, 95.0; South Pond, 1.3; Spring, 72.5; and Teal, 5.8. Total acreage, 336.0.

Table 2.--The species composition by number (N) and percentage (P) of the catch
from six lakes on the Rifle River Area in 1957¹

Species	Lake												Total number	Percentage of Area total
	Devoe		Dollar		Loon		North		South Pond		Teal			
	N	P	N	P	N	P	N	P	N	P	N	P		
Bluegill	3	Tr	1,552	82	865	40	2	1	112	97	11	20	2,545	52
Yellow perch	348	65	100	5	362	17	84	61	1	Tr	2	4	897	18
Pumpkinseed	2	Tr	78	4	486	22	..	..	..	..	29	54	595	12
Black crappie	40	7	22	1	206	9	1	Tr	..	..	..	..	269	5
Hybrid sunfish ²	1	Tr	72	4	110	5	..	..	..	..	11	20	194	4
Rock bass	52	10	11	Tr	45	2	14	10	1	Tr	..	..	123	2
Bullheads	..	Tr	17	1	93	4	2	1	..	..	..	..	112	2
Smallmouth bass	57	11	..	..	..	..	5	4	..	..	..	..	62	1
Largemouth bass	7	1	29	1	9	Tr	2	1	2	2	..	..	49	1
Brown trout	18	3	..	..	..	..	..	..	..	..	..	..	18	Tr
White sucker	..	..	..	..	..	..	17	12	..	..	..	..	17	Tr
Northern pike	5	1	..	..	..	..	5	4	..	..	1	2	11	Tr
Redear sunfish	..	..	7	Tr	..	..	..	..	..	..	..	..	7	Tr
Smelt	..	..	..	..	..	..	6	4	..	..	..	..	6	Tr
Rainbow trout	1	Tr	..	..	..	..	..	..	..	..	..	..	1	Tr

¹No fish were caught in Devil's Wash Basin and Spring Lake. In the body of the table, Tr = less than 0.5 percent.

²Bluegill x pumpkinseed.

A discussion of the fishing results for six of the eight lakes follows. Spring Lake and Devil's Wash Basin are omitted because both suffered a serious winterkill in the winter of 1955-1956, and no fish were caught by hook and line in 1957. Devil's Wash Basin was treated with toxaphene late in the fall and only mudminnows were recovered. In Spring Lake there is a large population of small black bullheads along with a few pumpkinseeds and largemouth bass. One perch was taken in a hoop net.

The scale-sampling procedure in 1957 was similar to that set up during the last half of 1956 (only a few scales, mostly of bass, were collected in 1945-1955). In 1957, however, scales were collected throughout the year and, with few exceptions, all fish not scale-sampled were measured. The measured fish were grouped into length-frequency intervals of one-half inch. Ages were assigned according to the percentage of the different age groups in similar size groups of scale-sampled fish. In so far as possible, estimates were made of the total contribution of each year class of a species to the catches.

Before the opening of the bass season an intensive netting program was carried out in Dollar and Loon lakes. Many fish were fin-clipped in these lakes in an effort to estimate the size of the respective fish populations by means of both netted recaptures of the marked fish and recoveries by anglers. Some aspects of this work are discussed below, but most of the data for these studies will be presented in another report.

Devoe Lake.--The fishing pressure on this lake declined 40 percent from last year (1,500 fewer hours) and the total harvest dropped nearly 50 percent. Twenty-two percent of the 747 angling trips were successful and 534 fish were caught which weighed a total of 183.6 pounds (Table 1). Perch comprised 65 percent of the catch, followed by smallmouth bass, rock bass, and crappies

(Table 2). Only one rainbow trout--a 13-inch fish to which a sea lamprey was attached--was included among the other six species caught. (No rainbow trout were stocked in Devoe Lake in 1957.)

The estimated age composition of the catches of rock bass, crappies, smallmouth bass, and perch is shown in Table 3. In 1957 the 1954 year class (age-group III) contributed two-thirds of the catch and the 1953 hatch made up 14 percent. (These two year classes also dominated the catch in 1956, when they were caught in about equal numbers.) One 9-year-old perch was caught in 1957. Sixty-one percent of the rock bass caught in 1956 were 3-year-old fish and in 1957 this same (1953) year class contributed 87 percent of the catch (as 4-year-old fish). The dominance of a single year class also was indicated for crappies, inasmuch as 40 percent of the 1956 catch were 2-year-old fish and 50 percent of the fish caught in 1957 were 3 years old. No marked dominance of a year class was observed for smallmouth bass; age-groups II and III together made up the bulk of the catch in both years (69 and 91 percent, respectively). Only seven largemouth bass were caught in Devoe Lake in 1957, but two of these were 14 years old. These fish had been in the lake since 1943--two years before the Department acquired the Area. One was the largest largemouth bass that has been caught in the Area since it was opened to the public (length 21.9 inches; weight 5 pounds, 10 ounces).

Most angling was done during the summer months. Twenty percent of the anglers fished the lake in the spring prior to the opening of the bass season but with little success. Only 48 fish were caught--mostly perch and rock bass. Throughout the year anglers who still-fished with worms greatly outnumbered anglers who fished by other methods. Their catch was mostly perch and rock bass. Half of the smallmouth bass were caught by fishermen who varied their method of fishing.

Table 3.--The estimated age composition of four species of fish caught in Devoe Lake in 1957
(N = number; P = percentage)

Age group	Yellow perch		Rock bass		Black crappie		Smallmouth bass	
	N	P	N	P	N	P	N	P
II	39	11	..	..	3	7	27	47
III	228	67	..	..	20	50	25	44
IV	49	14	45	87	8	20	2	4
V	12	4	3	6	4	10	2	4
VI	11	3	1	1.5	5	13	1	1
VII	1	..↓	2	4	..	...	..	..
VIII	1	..↓	1	1.5	..	..	..	..
IX	1	..↓	..	..	..	..	..	..
Totals	342 ²		52		40		57	

↓ Less than 0.5 percent.

² Six perch which were not measured are not included in this total.

Casters using artificial lures again (as in 1956) had poor success; 250 hours of angling produced only 14 fish. Fifty-nine fishermen fished the lake only by trolling and caught 17 fish (including 1 rainbow trout and 6 smallmouth bass).

North Lake.--The 138 fish taken in North Lake in 1957 were caught during 38 fishing trips; the other 298 fishing trips were unsuccessful. Fishing pressure was less than 10 hours per acre and the yield was a meager 0.7 pound of fish per acre (Table 1). Perch constituted 61 percent of the catch and few fish of other species were caught (Table 2). Half of the perch caught in 1956 were 4-year-old fish but 3-year-old fish outnumbered the other age groups in 1957. Since 31 of 37 smallmouth bass caught in 1956 were 3-year-old fish, it appeared that this 1953 year class might be relatively strong. However, only five bass were caught in 1957 (three from the 1953 year class). The six smelt taken in 1957 were the first that have ever appeared in the North Lake catch records, although they have been trapped in the outlet weir a number of times in the past. Another unusual catch was a 10 1/2-inch perch to which a 6-inch sea lamprey was attached.

Most of the angling was done in the summer. There was more ice fishing in 1957 than in any previous year. Four of the five pike caught and the six smelt were taken through the ice. No fish were caught in the fall, despite the efforts of 25 anglers. Still-fishermen who used worms outnumbered all others.

Dollar Lake.--The fishing pressure of 85.8 hours per acre on Dollar Lake in 1957 was nearly identical to the average annual pressure for the years 1945-1956 (86.4 hours per acre). Of 441 angling trips made on this lake, 270 (61 percent) were successful (Table 1). Anglers caught 1,888 fish which weighed almost 317 pounds (a yield of approximately 245 pounds per acre). As usual, bluegills dominated the catch (82 percent), followed by perch, pumpkinseeds, and

hybrid sunfish (Table 2). Other species caught included crappies, rock bass, bullheads, and largemouth bass.

Seven redear sunfish were caught in 1957. Plantings of fingerling redear sunfish were made in 1954 and 1956 but these were the first to be caught. The few fish that survived the 1954 stocking grew rapidly and spawned successfully in 1955. Five of the redears caught this year were some of their progeny and the other two were survivors of the 1954 planting.

The age composition was estimated for the catches of bluegills, perch, pumpkinseeds, largemouth bass, and hybrid sunfish (Table 4). There is no doubt that the 1952 year class of bluegills is a strong one. In 1956 these fish constituted 80 percent of the catch and in 1957 they made up 78 percent (as age-group V). No bluegills younger than 4 years of age were caught in 1957, and very few in 1956. Four-year-old fish dominated the catches of pumpkinseeds and largemouth bass whereas 3-year-old fish were most abundant in the catches of perch and hybrid sunfish.

Seventy percent of the fishing trips occurred in the summer and nearly two-thirds (63 percent) of the angling was done by still-fishing with worms from a boat. Except for largemouth bass, most fish (including the redear sunfish) were caught by this method. Anglers who cast with artificial lures took half of the bass and fishermen who used more than one method of angling accounted for 27 percent.

The rates of exploitation for the fish in Dollar Lake are shown in Table 6, expressed as the percentage of marked fish caught by anglers. On the basis of these returns, approximately 44 percent of both the hybrid sunfish and perch populations were caught by fishermen. The minimum sizes of these fish were 5 and 6 inches, respectively. The 1,552 bluegills taken are estimated to comprise

Table 4.--The estimated age composition of the catch of five kinds of fish from Dollar Lake in 1957¹
(N = number; P = percentage)

Age group	Species									
	Bluegill		Pumpkinseed		Hybrid sunfish		Largemouth bass		Yellow perch	
	N	P	N	P	N	P	N	P	N	P
I	..	..	..	..	..	..	..	..	3	3
II	..	..	..	..	..	..	..	..	21	21
III	..	..	21	27	60	88	3	13	55	55
IV	302	19	46	60	8	12	11	45	21	21
V	1,218	78	10	13	..	..	5	21	..	..
VI	18	1	..	..	..	..	3	13	..	..
VII	8	.. ²	..	..	..	..	1	4	..	..
VIII	3	.. ²	..	..	..	..	1	4	..	..
IX	3	.. ²	..	..	..	..	..	..	..	..
Totals	1,552	..	77	..	68	..	24	..	100	..

¹One pumpkinseed, 4 hybrid sunfish, and 5 largemouth bass which were not measured are not included in the table.

²Less than 0.5 percent.

about one-fourth of the bluegills at least 5 inches long which were available to anglers in the spring of 1957. Crappies had the lowest exploitation rate (1.5 percent).

Loon Lake.--There were 350 fishing trips on Loon Lake in 1957. This number was exceeded only in 1950, and the total of 910 hours of fishing was surpassed only in 1950 and 1955. This relatively heavy fishing pressure is attributed largely to a greater number of ice-fishing trips (74, as compared to a previous maximum of 12). As shown in Table 1, 70 percent of the anglers were successful; they caught a total of 2,176 fish which weighed 392.9 pounds. This was the largest yield for any lake in the Area in 1957.

Bluegills dominated the catch, followed by pumpkinseeds and perch (Table 2). More fish of all species were caught in 1957 than in 1956--increases which were not unexpected in view of the greater fishing pressure. The greatest increases were among rock bass and hybrid sunfish, many more of which were caught or reported in 1957 than in any previous year. (Probably not all hybrids caught in previous years were correctly identified.) Only nine largemouth bass were taken in 1957. This light catch was expected, however, because bass suffered a heavy mortality in the winter of 1955-1956 and only four were caught in 1956.

Ice fishermen accounted for 21 percent of the catch (463 fish) and these anglers took three-fourths of the crappies caught in 1957. As usual, most of the fishing was done in the summer, when about 50 percent of the fish were caught. Seventy-two percent of the open-water fishing was done by still-fishing with worms, whereas 63 of the 74 ice fishermen used grubs for bait. The 17 anglers who fished for a total of 53 hours with artificial lures caught 135 bluegills plus smaller numbers of six other species.

The estimated age composition of the catch of bluegills, pumpkinseeds, crappies, perch, and hybrid sunfish is shown in Table 5. Among the bluegills and perch,

Table 5.--The estimated age composition of the catch of five kinds of fish from Loon Lake in 1957[↓]
(N = number; P = percentage)

Age group	Species									
	Bluegill		Pumpkinseed		Yellow perch		Black crappie		Hybrid sunfish	
	N	P	N	P	N	P	N	P	N	P
I	..	..	..	..	4	1	..	..	..	..
II	128	15	20	4	10	3	..	..	16	15
III	339	39	247	51	134	37	2	1	66	61
IV	149	17	111	23	65	18	11	5	21	20
V	229	26	96	20	148	41	99	49	4	4
VI	20	3	12	2	..	..	74	37	..	..
VII	..	..	..	..	..	..	14	7	..	..
VIII	..	..	..	..	..	..	1	1	..	..
Totals	865	..	486	..	361	..	201	..	107	..

[↓]One yellow perch, 5 black crappies, and 3 hybrid sunfish which were not measured are not included in the table.

age-groups III and V dominated the catch. In 1956, more than 50 percent of the catch of both species was composed of 4-year-old fish. Thus, the 1952 year classes have made a major contribution to the catches in this lake for two successive years.

Among the pumpkinseeds and hybrid sunfish, 3-year-old fish were most numerous. Five- and 6-year-old crappies completely dominated the catch of this species but few crappies younger than 4 years were caught in either 1956 or 1957. All of the rock bass taken in 1957 were members of the 1953 year class (age-group IV). No largemouth bass older than 3 years were caught.

The exploitation rates of fish in Loon Lake by angling are shown in Table 6. The rates estimated for perch, crappies, and bluegills in Loon Lake were closely similar to the rates for Dollar Lake. In both lakes perch were the most heavily exploited and crappies were the least exploited. The percentage of bluegills caught in Loon Lake (27.9) was similar to that for bluegills in Dollar Lake (24.4), but a much smaller segment of the populations of pumpkinseeds, rock bass, hybrid sunfish, and bullheads were caught in Loon Lake than in Dollar Lake. The population estimates indicated that there were many more of these latter species in Loon Lake than in Dollar Lake.

South Pond.--As shown in Table 1, 79 angling trips were made to South Pond. The 113 hours of fishing is equivalent to 86.9 hours per acre--the most fishing pressure per acre for any Area lake or pond in 1957. Thirty-nine percent of the trips were successful. The 116 fish caught weighed a total of 30 pounds--a yield of 23.4 pounds per acre. All but four of the fish were bluegills (Table 2). Only age-groups III and IV were represented in the bluegill catch; group IV contributed two-thirds of the total. (This 1953 year class also made up 86 percent of the 1956 catch.) As might be expected, nearly all fishing in South Pond was with worms, by still-fishermen.

Table 6.--Exploitation rates of fish by angling in Dollar and Loon lakes in 1957

Species	Minimum length of fish marked (inches)	Dollar Lake			Loon Lake		
		Number of fish marked	Number of marked fish caught	Percentage exploitation	Number of fish marked	Number of marked fish caught	Percentage exploitation
Pumpkinseed	5.0	80	25	31.2	628	78	12.4
Bluegill	5.0	864	211	24.4	598	167	27.9
Rock bass	6.0	26	6	23.1	141	21	14.9
Black crappie	6.0	195	3	1.5	111	4	3.6
Hybrid sunfish	5.0	48	21	43.8	274	40	14.6
Perch	6.0	61	27	44.3	241	84	34.9
Largemouth bass	9.5	38	4	10.5	6	1	16.7
Bullheads ¹	7.0	26	9	34.6	211	9	4.3
Redear sunfish	8.0	10	2	20.0	...	...	...
Totals	...	1,348	308	22.8	2,210	404	18.3

¹Dollar Lake contains only brown bullheads. Loon Lake has both brown and black bullheads.

Teal Lake.--The few anglers who fished this small lake in 1945-1956 generally caught only perch. In 1957, however, 45 angling trips produced 54 fish, only two of which were perch (Table 2). Pumpkinseeds, bluegills, and hybrid sunfish, all of which were either 2 or 3 years old, dominated the catch. The one pike caught had been transferred from the North Lake weir in April, 1956.

Stream fishing

A total of 2,703 angler-trips, involving 6,257 hours of fishing, were made to the six trout streams that cover about 33.9 acres of the Rifle River Area. For convenience of presentation, the Diversion, a 2,370-foot by-pass of Gamble Creek (Fig. 1) was considered a separate trout stream and Skunk Creek was classified as non-trout water. No further mention will be made of Skunk Creek other than that a total of 4 hours of fishing on this creek produced no fish. Angling pressure on the other streams ranged from 23 hours per acre (Brown Trout Creek) to 237 hours per acre (Rifle River) and averaged 185.

The total yield of wild trout from all the streams was 984 fish that weighed 468 pounds. This is equivalent to 29 trout or 13.8 pounds per acre (Table 7). The over-all catch of wild trout was 0.13 fish per hour per angler.

Rifle River.--In 1957, as in the past, the Rifle River was the primary attraction for the majority of stream anglers in the Area. Angling effort on the Rifle River amounted to 2,253 angler-trips and 5,407.5 hours or 237 hours per acre. The catch was 791 wild trout (783 brown, 7 brook, and 1 rainbow), or about 35 fish per acre. This species composition is quite typical of the Rifle River catch in previous years. The "lower" Rifle River, between the mouth of Houghton Creek and the south boundary of the Area, was the primary source of trout. Anglers harvested 758 wild brown trout from this portion of the river and only 25 from the "upper" Rifle River (between Devoe Lake Dam and the mouth of Houghton Creek).

Table 7.--A summary of angling on the trout streams of the Rifle River Area in 1957

Stream	Area (acres)	Number of anglers	Hours of fishing	Wild trout		Hatchery trout		Other fish		Wild fish	
				Number	Pounds	Number	Pounds	Number	Pounds	Total number	Total pounds
Rifle River	22.8	2,253	5,407.5	791	391.2	296	73.5	78	70.2	869	461.4
Gamble Creek	5.9	214	401.0	64	22.4	7	4.7	12	4.2	76	26.6
Houghton Creek	0.9	67	119.5	19	10.1	1	0.2	0	...	19	10.1
Brown Trout Creek	2.6	31	61.0	7	2.4	0	...	0	...	7	2.4
Fontinalis Creek	0.9	76	147.5	90	35.9	1	0.4	0	...	90	35.9
Diversion	0.8	62	120.5	13	6.2	0	...	0	...	13	6.2
Totals	33.9	2,703	6,257.0	984	468.2	305	78.8	90	74.4	1,074	542.6

Stream	Wild trout per acre		Percentage of anglers taking wild trout	Catch of wild trout per hour per angler
	Number	Pounds		
Rifle River	34.7	17.2	14.6	0.11
Gamble Creek	10.8	3.8	19.2	0.17
Houghton Creek	21.1	11.2	17.9	0.20
Brown Trout Creek	2.7	0.9	9.7	0.06
Fontinalis Creek	100.0	39.9	40.8	0.48
Diversion	16.2	7.8	17.7	0.10
Totals	29.0	13.8	15.8	0.13

In addition to trout, 78 fish of six other species entered the catch (Table 8). Of these, 70.5 percent were white suckers. The non-trout species comprised only 9.0 percent of the total catch of wild fish. Most of the rock bass and perch were caught in the "upper" Rifle River.

The fishing statistics for the 'Whirlpool,' a small oxbow-like pond attached to the "upper" Rifle River, are not presented in the tables. In 91 fishing trips to the pond, anglers fished 132 hours and caught 20 fish that weighed 54.6 pounds. The total catch consisted of seven northern pike, seven suckers, and six carp.

Of the 775 wild brown trout caught in the Rifle River whose age was determined by scale examinations, 68 percent were in their third summer of life (age-group II); age-group III contributed 16 percent and age-group I, 11 percent (Table 9). Only four brown trout older than five years were caught.

As in past years, most fishermen (85 percent) failed to catch at least one wild trout. Thus the total harvest was shared by a relatively small minority.

Compared to 1956, there was a noticeable drop in total angling pressure on streams of the Rifle River Area during 1957. This reduction occurred primarily on the Rifle River where the total number of angler-trips and hours declined by approximately 24 percent; during 1957, angling intensity amounted to 237 hours per acre, in contrast to 313 hours per acre in 1956. One reason for the drop in angling pressure probably was the problem of access to the Area prior to and during the early part of the trout season. The county road, which borders the north boundary of the Area and provides an approach to the gate, was under reconstruction during the winter and spring of 1957. The extremely poor condition of the road during late April and the conflicting news releases issued at the time regarding access to the Area resulted in a relatively smaller turnout of early-season anglers. In the first week of the 1957 season, total angler-trips

Table 8.--The species composition by number and percentage of the anglers' catch from the streams of the Rifle River Area in 1957¹

Species	Rifle River	Fontinalis Creek	Gamble Creek	Houghton Creek	Diversion	Brown Trout Creek	Total	Percentage of total catch
Brown trout								
Wild	783	82	57	19	13	7	961	69
Hatchery	91	1	6	1	...	...	99	7
Rainbow trout								
Wild	1	...	...	...	...	...	1	Tr
Hatchery	202	...	1	...	...	...	203	15
Brook trout								
Wild	7	8	7	...	...	...	22	2
Hatchery	3	...	...	...	...	...	3	Tr
White sucker	55	...	5	...	...	...	60	4
Yellow perch	6	...	6	...	...	...	12	1
Rock bass	13	...	1	...	...	...	14	1
Others ²	4	...	...	...	...	...	4	Tr
Totals	1,165	91	83	20	13	7	1,379	...
Percentage of total catch	84.5	6.5	6.0	1.5	1.0	0.5	...	100

¹In the body of the table Tr = less than 0.5 percent.

²"Others" include 1 northern pike, 2 pumpkinseeds, and 1 carp.

Table 9.--Number (N) and percentage (P) of wild brown trout of different age groups caught in streams of the Rifle River Area in 1957¹

Age group	Rifle River		Fontinalis Creek		Gamble Creek		Houghton Creek		Diversion		Brown Trout Creek	
	N	P	N	P	N	P	N	P	N	P	N	P
I	82	11	3	4	1	2	2	11	..	..	..	..
II	522	68	33	45	18	34	12	66	7	54	3	50
III	121	16	18	25	27	50	3	17	5	38	1	17
IV	39	5	17	23	4	7	..	..	1	8	2	33
V	7	1	2	3	4	7	1	6	..	..	..	..
VI	2	Tr	..	..	..	..	..	..	..	..	..	..
VII	1	Tr	..	..	..	..	..	..	..	..	..	..
IX	1	Tr	..	..	..	..	..	..	..	..	..	..
Totals	775	..	73	..	54	..	18	..	13	..	6	..
Total catch ²	783	..	82	..	57	..	19	..	13	..	7	..

¹In the body of the table Tr = less than 0.5 percent.

²Includes fish for which age was not determined.

and hours were below that of 1956 by 52 and 60 percent respectively. Similarly, at the end of the second week total angler-trips and hours were down 43 and 44 percent respectively. Thus more than half of the total season loss in angler-trips and hours between 1956 and 1957 occurred during the first two weeks of the 1957 season.

In spite of the reduction in angling pressure, the total harvest of wild trout from the Rifle River in 1957 increased by 25.5 percent over that of 1956 (from 589 to 791 trout). The drop in angling effort coupled with an increased yield improved the catch per hour per angler significantly from 0.07 in 1956 to 0.11 in 1957 ($p = 0.05$).

Hatchery trout were not planted in the streams of the Rifle River Area during 1956, although they contributed 24.3 percent of the total catch of trout in 1956 as a result of the carry-over of fish from earlier plantings. The only stream in the Area which was stocked in 1957 was the Rifle River, which was planted with 525 legal-length hatchery trout. Hatchery trout, primarily from plantings of the current year, accounted for 23.6 percent of the total trout catch of 1957.

The yearly plantings of hatchery trout in the streams of the Rifle River Area as well as in the other streams of the Rifle River watershed north of highway M-55 are based on a six-year planting schedule for the period 1956-1961. This schedule is a duplication of the yearly plantings made in these streams during the six-year period of 1945 to 1950 (prior to watershed improvement). The primary purpose of this plan is to facilitate a comparison of angling quality for these two six-year periods by means of creel census.

Immediately after the close of the 1957 trout season a population study was conducted on the entire 4.6 miles of the Rifle River within the Rifle River Area. This was the first post-season population study made on this stream.

Direct-current electrofishing gear was employed to capture fish on two successive runs through the study area. Population estimates were based on the mark-and-recapture method of Petersen. In Table 10, the residual population of legal-length wild brown trout is compared with the total harvest by fishermen. A measure of the rate of exploitation can be observed in the ratio, harvest:residual population. For example, in the upper Rifle River one fish was caught for about every six remaining in the stream. For the lower Rifle River, one fish was captured for every three residing in the stream at the close of the season. For the entire Rifle River this ratio was 1 to 3. Cooper (1952) reported a similar ratio for the Pigeon River (one brown trout caught for every three in the post-season population).

As in previous years, worms continued to be the most frequently used lure on the Rifle River during 1957. Angling pressure by worm fishermen was 137 hours per acre compared to 47 hours per acre by fly fishermen. The yield of wild trout to worm fishermen was 380 fish and to fly fishermen, 323. It is extremely doubtful that a comparison of angling quality between the two groups is entirely valid without reference to experience and ability of the anglers. However, as a matter of record, the data showed that the catch per hour per angler for worm and fly fishermen was 0.08 and 0.26 respectively.

Gamble Creek.--On the basis of angling effort per unit area, Gamble Creek was very lightly fished in 1957. It was subjected to only about 68 hours of angling per acre and produced about 11 wild trout per acre. The total catch consisted of 57 wild and 6 hatchery brown trout, 7 brook trout, 5 white suckers, 6 perch, and 1 rock bass (Table 8). Forty-seven of the wild brown trout were taken from the section of the stream between the Ridge Road bridge and the mouth. All of the non-trout species were caught in this portion of the stream, probably in the area downstream from Mallard Pond. Trout from this stream appear to grow comparatively slowly. Three-year-old fish contributed 50 percent of the catch

Table 10.--The number of legal-length wild brown trout caught per acre in the Rifle River and the number per acre remaining at the end of the trout season, 1957

Section of Rifle River ¹	Angler harvest	Residual population
Upper	6.2	40.7
Lower	40.3	119.3
Upper and Lower	34.3	105.5

¹Lower Rifle River extends from the mouth of Houghton Creek to the south boundary of the Rifle River area; the upper river is the section of stream between Devoe Lake Dam and the mouth of Houghton Creek.

and two-year-olds made up 34 percent (Table 9). Only one yearling entered the catch. In contrast to this, the age-group composition in the Rifle River catch, as mentioned above, was in the order II-III-I, and two-year-old fish made up 68 percent of the catch.

Angling pressure on Gamble Creek decreased slightly from about 78 hours per acre in 1956 to 68 hours per acre in 1957. The decline in angling effort combined with a 28 percent increase in the total catch in 1957 altered the fishing quality index (catch per hour per angler) from 0.10 in 1956 to 0.17 in 1957. After the close of the 1957 trout season a population study on "upper" Gamble Creek indicated an estimated population of 87.2 legal-length brown trout per acre. Fishermen harvested 9.1 trout per acre. Thus, for every one brown trout caught approximately ten were left at the close of the season.

Houghton Creek.--In 67 trips, anglers spent 119.5 hours fishing the lower-most 0.2 mile of Houghton Creek which is within the Area. This is equivalent to about 133 hours per acre and, on the basis of a total catch of 19 wild brown trout, the yield was 20 trout per acre. Their age composition was similar to that of brown trout caught in the Rifle River (Table 9). A drop in angling pressure of about 35 percent in 1957 nearly doubled the index of angling quality from 0.09 fish per hour per angler in 1956 to 0.20 in 1957.

Fontinalis Creek.--The 0.9 mile of Fontinalis Creek was subjected to 147.5 hours of angling or about 164 hours per acre. Although this angling pressure was about 30 percent less than that on the Rifle River, it exceeded all other Area streams. Almost 100 wild trout per acre were harvested. Of the total yield of 90 wild trout, 82 were brown trout and 8 were brook trout. About 41 percent of the 76 angler-trips produced at least one wild trout. One experienced bait-fisherman caught two rather large brown trout (total length, 20.8 and 21.5 inches) in this small brushy stream. Although trout in their third or fourth year of life comprised the largest age groups, there was a tendency toward the harvest of a proportionately larger number of older fish.

As in 1956, Fontinalis Creek produced the highest quality of angling of all streams in the Rifle River Area in 1957. Fishing pressure on this stream increased slightly in 1957 over that of the previous year. Also, the yield increased 28 percent, from 65 trout in 1956 to 90 in 1957. The effect of the combined increase in angling effort and yield altered the catch per hour per angler figure from 0.40 to 0.48 for the years 1956 and 1957, respectively.

Diversion.--Angling intensity on the Diversion approached that of Fontinalis Creek. Sixty-two trips involved 120.5 hours of fishing or about 151 hours per acre. The entire catch from the Diversion consisted of 13 wild brown trout, 12 of which were 3- or 4-year-old fish. Fishermen averaged 0.10 fish per hour per angler (as compared to 0.21 in 1956).

Brown Trout Creek.--This was the lightest-fished stream in the Rifle River Area (23 hours per acre). Thirty-one anglers who spent 61 hours on this narrow, brushy stream creeled 7 wild brown trout.

Hunting

A summary of the 1957 hunting pressure and success is presented in Table 11. During the small-game seasons, 768 hunting days were recorded and the hunting pressure amounted to 2,410 hours, which was 379 hours more than in 1956. The ruffed grouse kill in 1957 (58) was nearly identical to that of 1956 (56). However, only 30 woodcock were bagged in 1957 as compared to 55 in 1956. Fifty ducks, 31 squirrels, and 9 rabbits were shot in 1957.

During the regular 1957 deer season, hunting pressure was lower than in previous years. Compared to 1956, hunter-days decreased 22 percent and hunting hours, 19 percent. Of 52 deer shot on the Area, 39 were legal kills and 13 were illegal. Twenty-six bucks were shot during the regular gun season, 12 deer were bagged in the special 2-day "any deer" season on December 1-2, and 1 was taken in the archery season. A total of 10,923 hours of hunting was done on the Area

Table 11.--A general summary of hunting on the Rifle River
Area in 1957

Season, and game species	Hunter days	Hunting hours	Animals harvested ¹
Small game	768	2,410	...
Ducks	...	...	50
Ruffed grouse	...	...	58
Woodcock	...	...	30
Rabbits	...	...	9
Squirrels	...	...	31
Deer (gun)	1,838	8,403	38
Deer (archery)	660	2,520	1

¹In addition, 13 deer which had been killed illegally were located on
the area.

in the three deer-hunting periods. During the regular gun season, an average of 204 hours were spent for each deer killed. Seventy-three percent of the bucks killed in the regular gun season were in the 1 1/2-year-old age group. The oldest buck was 4 1/2 years old. The average field-dressed weight of the bucks taken in 1957 was 105.5 pounds.

Trapping

Seven beaver were taken by three trappers in the spring of 1957. The largest beaver weighed 69 1/2 pounds. In the fall, 5 trappers harvested 137 muskrats, 6 mink, and 2 raccoons in a total of 2,046 trap nights.

Miscellaneous Area activities

The field work on the lakes and streams of the Rifle River Area in 1957 is summarized as follows: (1) Fish population estimates were made in Dollar Lake, Loon Lake, Teal Lake, South Pond, the Rifle River, a portion of Gamble Creek within the Area boundaries, and three sections of Houghton Creek outside the Area. (2) Fish collection stations on the Rifle River and its tributaries outside the Area, that have been sampled in previous years, were checked again during 1957. (3) Weekly collections of brown trout were made during the trout season in a stretch of Houghton Creek near the Area boundary. The fish were marked and released to assess the amount of recruitment to the trout fishery in the Area from this important tributary. (4) Weirs in Gamble Creek and in the outlet of North Lake were operated in the spring. (5) In an attempt to measure the relative numbers of young-of-the-year fish in the lakes in August, shorelines were seined in Devoe and North lakes and small, cylindrical, wire traps were used in the other lakes. (6) Toxaphene was applied to Devil's Wash Basin in November to remove the remnant fish population prior to restocking in 1958. (7) A weir was installed in the small stream connecting Loon and Devoe lakes in the spring

of 1957 to observe the movement of fish between the lakes. Traps were set in the outlet of Spring Lake to make similar observations. (8) Test netting was done in Spring Lake to determine the status of the fish population one year after a severe winterkill.

Considerable attention was paid to the study of growth rates of fish in Area waters, but the study was not completed. Much progress also was made in the review and analysis of creel-census data collected from the lakes in 1945-1956. Past data collected at the weirs were summarized by H. Gowing preparatory to writing a report on this phase of the stream work. Mark-sensing cards were used in the trout creel census for the first time. A paper entitled "Relationship between food supply and condition of wild brown trout, Salmo trutta Linnaeus, in a Michigan stream" by R. J. Ellis and H. Gowing was published in the October 1957 issue of Limnology and Oceanography. A conference on research programs for the three fisheries research stations in the northern half of the Lower Peninsula was held at the lodge in October.

Investigations by Game Division biologists included ruffed grouse censusing, trapping, and banding by Walter Palmer; fox tracking under the direction of Raymond Schofield in an effort to locate illegal doe kills; deer studies in the hunting season by Lewis Ruch and W. C. Ryder; and the release of 12 pinioned Canada geese in the spring by John Byelich. Two men from the Parks Division were employed by the Game Division to man the checking station during most of the small-game hunting season (October).

The county road in front of the Area was graded and a seal coat put on, with the result that a hard-surfaced road now leads from Rose City to the entrance of the Area. The well at the checking station was deepened. A water-level gauge was installed in Dollar Lake by the U. S. Geological Survey to measure ground-water levels. Most of the fence line was rebuilt by an inmate crew under the supervision of the Game Division.

Reference

Cooper, Edwin L.

1952. Rate of exploitation of wild eastern brook trout and brown trout populations in the Pigeon River, Otsego County, Michigan. Trans. Am. Fish. Soc., 81 (1951): 224-234.

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