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INSTITUTE FOR FISHERIES RESEARCH
DIVISION OF FISHERIES
MICHIGAN DEPARTMENT OF CONSERVATION
COOPERATING WITH THE
UNIVERSITY OF MICHIGAN

ALBERT S. HAZZARD, PH.D.
DIRECTOR

June 10, 1953

ADDRESS
UNIVERSITY MUSEUMS ANNEX
ANN ARBOR, MICHIGAN

Report No. 1375

THE 1952 RIFLE RIVER AREA REPORT

By

Lawrence H. Bush

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FISH DIVISION

Abstract

During 1952 people swarmed to the recreational advantages of the Rifle River Area in greater numbers than ever before. Permits issued climbed to a new high of 21,167 as compared to 19,769 in the 1951 season. The 6.6% increase over the previous year was the greatest year to year jump in visitor tallies since the 1947 gain of 12.5% over its predecessor.

A review of the records shows that 3,942 permits were issued to anglers, 17 to froggers, 2,915 to hunters, 117 to trappers, and 14,176 to those classed as sightseers. Angler permits dropped 12.1% (545) below the 1951 totals, froggers increased by 58.8% (7), hunters by 30.1% (878), trappers declined by 18.8% (27), and sightseers added 7.8% (1,102) to the year's totals.

Total angler permits issued were less than in any year since 1947 and reflected a sharp decline in stream fishing. Angler days on trout waters slumped 21.5% (609) below those recorded for 1951, and a drop in the catch of 49.2% (617) resulted in the smallest take of trout since the 1945 opening. The quality of fishing on the combined area streams in 1952 was down to 0.13 trout per hour of fishing effort as compared to 0.17 in the previous year and to an average of 0.20 for the entire 8-year period of state ownership.

Although fewer in numbers the trout taken in 1952 averaged considerably larger in size, and as a result the pounds-per-hour figure stood at 0.07 which was the same as in the 1951 season. A decline in the catch of small hatchery rainbows during 1952 would seem to be part of the reason for the drop in catch per hour from the previous year. However, lake angling surged ahead with a 19.7% (336) vault in angler days and a total catch of 7,036 which exceeded all years except 1950 in numbers of fish taken. The lakes and streams combined produced a total of 8,090 fish weighing more than a ton (2,078.86 pounds). The catch of 15 different species was dominated by yellow perch (3,710) and bluegills (2,178) which together comprised nearly 3/4 (73.0%) of the total numbers and slightly over half (50.1%) of the aggregate weight.

Frog hunters were more numerous and successful in 1952 than in 1951 but their frogs averaged 2.4 ounces lighter. The 1952 catch of 149 frogs, that totaled 37 pounds in weight, involved 47 hours of effort (representing 17 frogging trips) for a catch per hour of 3.2; the catch per hour in 1951 was 2.7. One of the frogs was taken from Dollar Lake incidental to fishing while the remaining 148 were captured by frog hunters on Spring Lake. Fifteen frogs were caught on artificial flies and the rest were either speared, clubbed, or jumped on.

Hunters registered gains in all categories last year. Permits written for small game hunting topped the list, and were up 48.2% over the 1951 totals, while rifle deer hunters increased their ranks by 19.7% and archers were 18.4% more plentiful. The 1952 bag of over 4 tons (8,111.8 pounds) of game, largest in the Area's history, was in part due to the special season on antlerless deer and partly the result of the largest kill of small game during public ownership. The first open season on antlerless deer added 48 does and fawns to the 27.3% increase over 1951 (22 bucks were killed in 1951

as compared to 28 in 1952) in the number of bucks removed, and bird hunters more than doubled the take of grouse and woodcock for the largest bag of these species yet recorded for any one year.

Fewer trappers, more pelts, and less profit was the keynote of the 1952 fur seasons. Although prices tumbled in a sagging fur market, the loss to profit-conscious trappers was to some degree offset by the largest take of furbearers since the 1948 season. More mink were caught than in any other year, more muskrats trapped than in any season except 1948, and more beaver taken than in either of the two preceding seasons.

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The Streams

Trout fishing in general nose-dived from 1951 levels last year. The over-all picture was one of less fishermen taking fewer fish at a lower average rate per hour. (See Tables 1 and 2.) However, the slump in angling quality that plunged the catch per hour to a seven year low of 0.13 may not be as dark as it would appear at first glance. (See Table 5.) Perhaps we are only looking at one side of the story when we calculate angling quality entirely on the basis of numbers, so let's take a look at the other side.

The year before last, hatchery trout made up 38.5% of the total catch on Area streams as compared to 19.6% last year. The results--less small rainbows and a significant drop in number quality, but on the other hand successful fishermen averaged 0.99 pound of trout in their baskets as compared to 0.93 pound in their 1951 creels. And although the catch per hour dropped from 0.17 to 0.13 the catch in pounds per hour stood at 0.07 which was the same as in 1951.

In 1952 as in other years the waters of the Rifle River were displaced by more boots and waders than were any of the other streams. (See Table 1.) The big stream of the Area accounted for 88.6% of the angler-days chalked up

to trout fishermen, and filled their creels with 81.0% of the total catch. By comparison, in 1951 a total of 88.4% of the trout anglers took 89.7% of that season's catch from the Rifle.

Fishing quality on the Rifle River showed a significant drop of from 0.15 trout per hour per angler in 1951 to 0.12 in the 1952 season. The catch-per-hour figures were recorded at 0.171 and 0.113 respectively, while pounds per hour dropped from 0.072 to 0.062 last year.

Fishing pressure on Gamble Creek declined sharply last year. There were fewer fishermen on the stream than in any year since 1948 and angler-days recorded dropped 40.0% (52) below 1951 levels, but a proportionately larger catch raised the catch per hour from 0.132 up to 0.149, and the pounds per hour from 0.038 the year before to 0.059 last year.

In 1951 Houghton Creek held first place in angling quality among Area streams with a catch of 0.50 trout per hour but in 1952 it dropped to a poor second behind Fontinalis Creek with only 0.16 fish being taken for each hour of angling effort. On the basis of wild trout only it dropped even lower with a catch-per-hour figure that was below all other Area streams except the Rifle River. (See Table 2.) Although angling quality slumped below 1951 levels during 1952, Houghton Creek was the only Area stream to show an increase in fishing pressure over the previous year with the exception of Fontinalis Creek.

In 1952 a total of 15 angler-days, 23 hours, and 3 trout were recorded for Brown Trout Creek, while in 1951 the figures stood at 69 angler days, 123 hours, and 3 trout. The obvious result was a sharp up-swing in angling quality in spite of a 78.3% loss in angler-days.

The brightest spot in the 1952 trouting picture was Fontinalis Creek where more than twice the number of anglers took over ten times as many fish as the year before. No other Area stream approached the little tributary in

either angling quality or the number of successful anglers, and only one of the fish taken was of hatchery origin.

Brown trout taken from the Upper Rifle River had the highest average weight (11.5 ounces) for that species of any of the Area streams, but browns from the Rifle River as a whole averaged slightly smaller than those taken from Houghton Creek. The heaviest rainbows also came from the Upper Rifle, and the largest brook trout were caught in the Lower Rifle River.^{1/} (See Table 3.)

Warm-water fish of several species (See Table 4) made up 36.4% of the total fish taken from all Area streams. By far the largest number of non-trout species (294) were taken in the Upper Rifle River where they constituted 91.9% of the total catch. No warm-water species were taken by anglers from Fontinalis, Gamble, or Brown Trout creeks.

A comparison of angling pressure and success on Area streams over an 8-year period (1945-1952) will be found in Table 5.

^{1/} That portion of the Rifle River extending upstream from the mouth of Houghton Creek to the Devoe Lake Dam has been designated as the Upper Rifle River for creel census purposes. The remainder of the stream within the Area boundaries is classified as the Lower Rifle River.

Table 1. Summary of angling results on Rifle River Area streams in 1952.
 (For detailed information see Tables 2, 3, and 4.)

Stream	Total angler-days	Number angler-days 0 trout	Percent-age of angler-days 0 trout	Total hours of angling	Brook trout		Brown trout		Rainbow trout		Other fish		Trout totals	
					Num-ber	Wt. (oz.)	Num-ber	Wt. (oz.)	Num-ber	Wt. (oz.)	Num-ber	Wt. (oz.)	Num-ber	Wt. (oz.)
Rifle R. (Upper)	409	385	94.1	871.5	1	4.2	13	148.9	12	76.6	294	951.0	26	229.7
Rifle R. (Lower)	1,557	1,290	82.9	3,709.5	7	41.6	402	4,049.7	81	401.2	66	601.0	490	4,492.5
TOTALS RIFLE RIVER	1,966	1,675	85.2	4,581.0	8	45.8	415	4,198.6	93	477.8	360	1,552.0	516	4,722.2
Gamble Cr. (Upper)	29	23	79.0	35.0	0	...	7	50.8	0	...	0	...	7	50.8
Gamble Cr. (Lower)	49	42	85.7	72.5	3	16.7	5	29.8	1	4.5	0	...	9	51.0
TOTALS GAMBLE CR.	78	65	83.3	107.5	3	16.7	12	80.6	1	4.5	0	...	16	101.8
HOUGHTON CR.	106	86	81.1	239.5	0	...	26	269.9	13	56.2	4	35.0	39	326.1
BROWN TROUT CR.	15	13	86.7	23.0	0	...	3	10.7	0	...	0	...	3	10.7
FONTINALIS CR.	49	32	65.3	91.5	17	59.0	44	232.9	1	4.0	0	...	62	295.9
DIVERSION	4	3	75.0	11.5	0	...	0	...	1	6.0	0	...	1	6.0
STREAM TOTALS	2,218	1,874	84.5	5,054.0	28	121.5 (7.59 lbs.)	500	4,792.7 (299.54 lbs.)	109	548.5 (34.28 lbs.)	364	1,587.0 (99.19 lbs.)	637	5,462.7 (341.42 lbs.)

Table 2. Angling quality on Rifle River Area trout streams in 1952.

Stream	HOUR QUALITY			ANGLER HOUR QUALITY			ACRE QUALITY		
	Numbers per hour	Numbers per hour (wild trout only)	Pounds per hour	Numbers per hour angler	Pounds per hour angler	Q	Numbers per acre	Pounds per acre	Hours fished per acre
Rifle R. (upper)									
Trout	0.030	0.016	0.016	0.052	0.033	0.042	6.5	3.59	217.9
All Species	0.367	...	0.085	0.375	0.100	0.238	80.0	18.45	...
Rifle R. (lower)									
Trout	0.132	0.106	0.076	0.136	0.082	0.109	26.1	14.90	197.3
All Species	0.150	...	0.086	0.152	0.091	0.122	29.6	16.90	...
RIFLE RIVER									
Trout	0.113	0.089	0.064	...	...	...	22.6	12.92	200.9
All Species	0.191	...	0.086	...	...	...	38.4	17.17	...
Gamble (upper)									
Trout	0.200	0.171	0.091	0.201	0.088	0.144	6.5	2.94	31.8
All Species	0.200	...	0.091	0.201	0.088	0.144	6.5	2.94	...
Gamble (lower)									
Trout	0.124	0.124	0.044	0.100	0.040	0.070	1.9	0.66	15.1
All Species	0.124	...	0.044	0.100	0.040	0.070	1.9	0.66	...
GAMBLE CREEK									
Trout	0.149	0.140	0.059	...	...	...	2.7	1.07	18.2
All Species	0.149	...	...	...	...	...	2.7	1.07	18.2
HOUGHTON CREEK									
Trout	0.163	0.108	0.085	0.147	0.075	0.111	48.8	22.90	299.3
All Species	0.180	...	0.094	0.168	0.088	0.128	53.8	25.36	...
BROWN TROUT CREEK									
Trout	0.130	0.130	0.029	0.091	0.020	0.056	1.2	0.26	9.2
All Species	0.130	...	0.029	0.091	0.020	0.056	1.2	0.26	9.2
FONTINALIS CREEK									
Trout	0.678	0.667	0.202	0.481	0.155	0.318	68.9	19.67	101.7
All Species	0.678	...	0.202	0.481	0.155	0.318	68.9	19.67	101.7

Q = $\frac{\text{Number of fish per hour per angler} + \text{pounds per hour per angler}}{2}$

Note: Only 4 anglers fished on the "Diversion" taking 1 hatchery rainbow at a catch per hour of 0.087 and 0.033 pounds. (Since the diversion has not been mapped it was impossible to compute the numbers or pounds per acre.)

Table 3. Average weights and percentage of total catch of trout for Rifle River Area trout streams in 1952.

Stream	BROOK TROUT		BROWN TROUT		RAINBOW TROUT		Percentage comparison of warm-water fish and trout taken	
	Avg. wt., ounces	Percent- age of total trout catch	Avg. wt., ounces	Percent- age of total trout catch	Avg. wt. ounces	Percent- age of total trout catch	Trout	Others
Rifle River (upper)	4.2	3.8	11.5	50.0	6.3	46.2	8.1	91.9
Rifle River (lower)	5.9	1.4	10.1	82.0	5.0	16.5	88.1	11.9
RIFLE RIVER	5.7	1.6	10.1	80.4	5.1	18.0	58.9	41.1
Gamble Creek (upper)	0	...	7.3	100.0	0	...	100.0	0
Gamble Creek (lower)	5.6	33.3	6.0	55.6	4.5	11.1	100.0	0
GAMBLE CREEK	5.6	18.8	6.7	75.0	4.5	6.2	100.0	0
HOUGHTON CREEK	0	...	10.4	66.7	4.3	33.3	90.7	9.3
BROWN TROUT CREEK	0	...	3.6	100.0	0	...	100.0	0
FONTINALIS CREEK	3.5	27.4	5.3	71.0	4.0	1.6	100.0	0
DIVERSION	0	...	0	...	6.0	100.0	100.0	0
1952 Averages for all streams combined	4.3	4.4	9.6	78.5	5.0	17.1	63.6	36.4

Table 4. Species composition of warm-water fish taken by angling from the Whirlpool and Rifle River Area trout streams.

Stream	Large-mouth bass	Small-mouth bass	Northern pike	Bluegills	P'seed	Yellow perch	Rock bass	Bullheads	White sucker	Carp
Whirlpool										
Number	0	1	21	0	0	0	0	0	33	0
Wt. oz.	...	61.0	853.0	...	...	...	...	...	582.0	...
Rifle R. (upper)										
Number	0	1	2	0	4	80	188	2	16	0
Wt. oz.	...	35.0	61.5	...	6.0	100.0	484.0	14.0	250.5	...
Rifle R. (lower)										
Number	0	0	0	0	0	24	8	0	33	1
Wt. oz.	...	...	...	...	...	50.0	40.0	...	446.0	65.0
RIFLE RIVER										
Number	0	1	2	0	4	104	196	2	49	1
Wt. oz.	...	35.0	61.5	...	6.0	150.0	524.0	14.0	696.5	65.0
HOUGHTON CREEK										
Number	0	0	0	0	0	1	1	0	2	0
Wt. oz.	...	...	...	...	...	2.0	8.0	...	25.0	...
Totals for trout streams (exclusive of the whirlpool)	0	1	2	0	4	105	197	2	51	1
	...	35.0	61.5	...	6.0	152.0	532.0	14.0	721.5	65.0

Table 5. Angling comparisons of combined Rifle River Area trout streams over an 8-year period, 1945 through 1952.

Year	Total angler-days	Percent- age of angler- days O trout	Total hours of angling	Brook trout		Brown trout		Rainbow trout		Total trout		Catch per hour all trout	Catch per hour native trout	Other fish	
				Num- ber	Wt.	Num- ber	Wt.	Num- ber	Wt.	Num- ber	Wt.			Num- ber	Wt.
1945	1,472	87	3,397.5	25	9.67	381	181.52	12	4.36	418	195.56	0.12	0.12	28	26.36
1946	1,427	79	3,396.0	28	7.17	993	374.41	45	13.90	1,066	395.48	0.31	0.30	98	52.50
1947	1,959	72	4,659.0	71	...	1,360	...	125	...	1,556	587.44	0.33	...	139	117.56
1948	2,162	80	5,081.0	22	5.45	1,022	425.17	40	11.72	1,084	442.34	0.21	0.16	449	87.03
1949	1,749	80	4,135.5	27	6.65	762	312.79	85	46.29	874	365.73	0.21	0.19	110	65.22
1950	2,612	83	6,917.0	7	1.87	633	273.53	407	92.94	1,047	368.34	0.15	0.09	51	29.38 ^{cc}
1951	2,827	81	7,266.0	9	2.65	711	350.26	534	154.45	1,254	507.36	0.17	0.11	248	195.99
1952	2,218	85	5,054.0	28	7.59	500	299.54	109	34.28	637	341.42	0.13	0.10	364	99.14
Totals for 8 years			16,426	39,906.0	217	6,362	1,357	7,936					1,487		

The Lakes

The 1952 creel census records for the Rifle River Area lakes show an increase of 326 angler-days, 576.5 hours, and 571 fish over the 1951 season. Of the 9 lakes fished on last year, only two, North and Loon, experienced a drop in angler-days, but five including Dollar, North, South Pond, and Teal produced less fish than in the previous year.

Angling quality remained comparatively high for the combined lakes in 1952 with 1.19 fish being taken for each hour of angling effort (1.249 fish per hour per angler) as compared to 1.21 in 1951, and 1.43 for the 1952 general creel census returns from non-trout waters throughout the state. (See Table 7.) Devoe Lake, the Devil's Washbasin, and Spring Lake all registered an upswing in angling quality, and Pintail Pond was fished on for the first time during public ownership.

A monthly comparison of the catch per hour per angler trends on Devoe and Dollar lakes during the 1952 season will be found in Figure 2 at the end of the report. This graph shows that on the Area's most fished lakes angling quality in both numbers and pounds reached its peak during the month of August. Since angling quality for both lakes was charted to the same scale, the better average quality for Dollar Lake over Devoe Lake, and the greater uniformity of the former lake's productivity throughout the season will appear obvious at first glance. The great fluctuations in both numbers and pounds per hour per angler for Devoe Lake can be accounted for by large catches of small fish at one time (mostly yellow perch), and small catches of large fish at others (largemouth bass, smallmouth bass, northern pike, or suckers).

In April the pound quality for Devoe Lake was up and the number quality down because the majority of the fish caught by the few anglers were fairly large suckers. A catch, predominantly made up of small yellow perch, reversed

the picture in May by bringing the numbers per hour per angler up and sending the pounds per hour per angler down. June registered an upswing in pound quality due to the opening of the season on largemouth and smallmouth bass and an increase in the catch of northern pike. In July a dropping off in the catch of largemouth bass and northern pike, and an increase in the catch of yellow perch again reversed the trend by raising the number quality above, and dropping the pound quality below June levels. The rise in both numbers and pound quality in August to the season's highest level was the result of a more even balance between the catch of large game fish (smallmouth bass), and small yellow perch, although an 18 pound carp taken during that month probably influenced the rise in pounds per hour per angler. In September fishing pressure fell to a point almost equal to that of April, and angling quality expressed in pounds was the poorest recorded for any month during the 1952 season.

Figure 1 at the end of the report shows the general upward trend in the condition of largemouth bass taken from Devoe and Dollar lakes during the past 8 years. The deviations in 1948 and 1949 which throw the Dollar Lake picture slightly out of focus might possibly be due to the relatively smaller samples for those years. Further examination of scale samples from these lakes might shed more light upon the reason for this improved condition which seems to be true of other species as well.

Devoe Lake almost faded out of the picture as a cold-water fish-producer last year. A total of 2 hatchery rainbows and 3 native browns were removed by anglers for the smallest trout catch in Devoe's creel census history. With the exception of 1949 when 344 planted rainbows were recovered, the annual stocking of trout in Devoe Lake appears to have been hardly worth while, unless viewed from the standpoint of providing food for larger game species such as bass and pike. Area streams, especially the Rifle River, benefited more by the Devoe Lake rainbow plantings in 1952 than did the lake itself.

In general, however, the Area's most fished lake was more productive than in the 1951 season. Although a total of 29 more angler-days were recorded, 83 less hours of fishing effort, and an increase in the catch of 400 fish, combined to raise the catch per hour from 0.56 in 1951 to 0.75 (0.77 per hour per angler) last year. All of the major warm-water game species (largemouth bass, smallmouth bass, northern pike, bluegills, and yellow perch) were more abundant in angler's creels than they were in the 1951 season.

In addition to fish removed by anglers from Devoe Lake, 3 brown trout, 1 rainbow trout, 1 smallmouth bass, 1 northern pike, 581 yellow perch, 1 rock bass, and 2 common suckers were taken in gill nets during investigations of sea lamprey depredations.

Spring Lake made the greatest contribution to the increased angling and catch totals for the combined non-trout waters over and above the 1951 season. Returning to high productivity following the 1950-51 winterkill which reduced the previous year's take to 6 fish, Spring Lake bounced back last year with 310 fishermen taking 1,778 fish at a rate of 1.77 per hour (1.681 per hour per angler) as compared to 0.07 per hour (0.306 per hour per angler) in the 1951 season. The catch was predominately yellow perch and had the highest average weight (3.8 ounces) for that species of any of the Area lakes. (Yellow perch from Teal Lake averaged 3.3 ounces, from Dollar 3.1 ounces, from North 2.9 ounces, from Loon 2.4 ounces, from Devoe 1.7 ounces, and from the Devil's Washbasin 1.6 ounces.)

Spring Lake was also the chief source of frog legs during the 1952 season. Of the 149 frogs taken from the Area last year 148 were taken from Spring Lake by people in quest of frogs, while one was captured incidental to angling on Dollar Lake. In 1951 a total of 100 frogs were taken by Area frog hunters in 10 trips that involved 37 hours of effort, while last year

frogers made 17 trips for a total of 47 hours to capture 148 frogs.^{2/} This increase in the take of frogs raised the catch per hour from 2.7 in 1951 to 3.2 frogs in 1952, but the average weight of the frogs was 2.4 ounces less than in the previous season.

In contrast to Spring Lake and Devoe Lake, angling quality dropped below 1951 levels on Dollar, Loon, and North lakes during the 1952 season. The number of fish recorded for each hour of angling effort on Dollar Lake in 1951 was 2.41 (2.628 per hour per angler), and in 1952 the fishing quality slumped to 1.77 (1.785 per hour per angler), while the figures for Loon Lake stood at 3.18 (2.925 per hour per angler), and 1.98 (2.088 per hour per angler) respectively, and for North Lake at 0.22 (0.242 per hour per angler) the year before last and 0.18 (0.239 per hour per angler) last year.

The increased productivity of Spring Lake, predominately yellow perch, an increase in the Devoe Lake perch catch, and a drop in the take of bluegills from Loon Lake, was mainly responsible for yellow perch being the most caught fish during the 1952 lake season. In 1951 a total of 2,556 bluegills were taken from all the Area lakes as compared to 1,742 yellow perch, but last year the relative positions of the Area's most caught, and perhaps most sought lake fish, were reversed with a total of 3,605 yellow perch and 2,178 bluegills being recorded for the combined waters. (See Table 8.)

A total of 1,115 scale samples representative of all the important warm-water game species were collected during the 1952 lake season. Devoe Lake contributed 276 to the total, Dollar 295, Spring 227, Loon 91, the Devil's Washbasin 81, North Lake 62, South Pond 31, Teal Lake 26, the Whirlpool 20, and Pintail Pond 6 scale samples. This is the largest and most

^{2/} Hours, catch per hour, and trips were figured on the basis of 148 frogs taken from Spring Lake since the hours and trip involved in taking the single frog from Dollar Lake were used in angling totals.

representative collection of scale samples yet made and should add greatly to our knowledge of warm-water fish in the Area lakes.

A general summary of angling data for the 9 lakes will be found in Table 6 and a year-to-year comparison of angling pressure and production for the combined lakes from 1945 through 1952 is given in Table 9.

Methods of analyzing angling data

In preparing the tables on angling quality catch per hour figures were arrived at by dividing the total number of fish, or pounds, by the total hours of angling effort. Catch per hour per angler was determined by the equation

$$\frac{\sum X}{N} = \bar{X}$$

with N representing total angler days, $\sum X$ the sum of the catch per hour in numbers or pounds by individual anglers, and \bar{X} the average catch per hour per hour per angler in pounds or numbers.

The Q value found in Tables 2 and 7, is an attempt to abstract a more accurate measure of fishing quality than either numbers per hour per angler or pounds per hour per angler give when taken separately. It is hoped that it will eliminate to some extent distortions resulting from comparisons of waters producing large numbers of stunted fish and those producing small numbers of large fish. Also, that it will provide this information at a glance without the involved and tricky process of making mental comparisons between numbers and pounds quality when looking at a table of this kind. In this instance Q was arrived at by the formula

$$\frac{\text{numbers per hour per angler} + \text{pounds per hour per angler}}{2} = Q,$$

but perhaps a better method could be worked out to determine something closer to real angling quality.

Table 6. General summary of angling results on Rifle River Area lakes in 1952.
(For detailed information see Tables 7 and 8)

Lake	Total angler-days	Number angler-days 0 fish	Percent- age of angler- days 0 fish	Total hours of angling	Total game fish taken	Weight of game fish taken (lbs.)	Total rough fish taken	Weight of rough fish taken (lbs.)	Total catch all species	Total weight of all fish taken (lbs.)
Devoe Lake	727	468	64.4	2,389.0	1,755	358.58	25	44.56	1,780	403.15
Dollar Lake	445	107	24.0	1,312.5	2,287	434.26	34	17.38	2,321	451.63
Devil's Washbasin	18	5	27.8	31.5	183	18.00	42	8.69	225	26.69
Loon Lake	126	48	38.1	281.0	376	93.09	181	28.84	557	121.94
North Lake	233	184	79.0	669.0	115	64.34	2	1.75	117	66.09
Pintail Pond	8	5	62.5	5.5	6	6.97	0	...	6	6.97
South Pond	79	32	40.5	159.5	183	35.84	2	1.12	185	36.97
Spring Lake	310	69	22.3	1,000.0	1,692	405.91	84	8.28	1,776	414.19
Teal Lake	37	22	59.5	77.0	69	14.25	0	...	69	14.25
Lake totals for 1952	1,983	940	47.4	5,925.0	6,666	1,431.24	370	110.62	7,036	1,541.88
Whirlpool	86	53	61.7	215.5	22	57.12	33	36.38	55	93.50
Frogging	17	0	0.0	46.0	149 Frogs	37.00			149 Frogs	37.00

Note: Game fish includes: brown and rainbow trout, largemouth bass, smallmouth bass, northern pike, bluegills, P'seeds, rock bass, crappies, and yellow perch. Rough fish includes: bullheads, white suckers, and carp.

Table 7. Angling quality on Rifle River Area lakes in 1952.

Lake	HOUR QUALITY		ANGLER HOUR QUALITY			ACRE QUALITY		
	Numbers per hour	Pounds per hour	Numbers per hour per angler	Pounds per hour per angler	Q	Numbers per acre	Pounds per acre	Hours fished per acre
Devoe Lake	0.745	0.169	0.774	0.174	0.474	13.72	3.11	18.42
Dollar Lake	1.768	0.344	1.785	0.346	1.066	179.92	35.01	101.74
Devil's Washbasin	7.143	0.847	7.734	0.976	4.355	173.08	20.53	24.23
Loon Lake	1.982	0.434	2.088	0.528	1.308	32.38	7.09	16.34
North Lake	0.175	0.099	0.239	0.110	0.174	1.23	0.70	7.04
Pintail Pond	1.091	1.267	1.250	0.918	1.084	4.62	5.36	4.23
South Pond	1.160	0.232	1.336	0.288	0.812	142.31	28.44	122.69
Spring Lake	1.772	0.413	1.681	0.379	1.030	24.53	5.72	13.84
Teal Lake	0.896	0.185	0.721	0.150	0.436	11.90	2.46	13.28
Average for all lakes	1.188	0.260	1.249	0.274	0.762	20.58	4.51	17.33

Q = $\frac{\text{Number of fish per hour per angler} + \text{pounds per hour per angler}}{2}$

Table 8. Species composition of warm-water fish taken by anglers on Rifle River Area lakes in 1952.

Lake	Large-mouth bass	Small-mouth bass	North-ern pike	Blue-gills	P'seed	Hybrids (B'gill x P'seed)	Yellow perch	Rock bass	Black crappies	Bull-heads	White sucker	Carp
Devoe Lake												
Number	24	55	14	75	7	0	1,508	58	9	3	21	1
Wt. oz.	645.0	1,090.0	681.0	291.5	19.5	...	2,604.5	151.5	94.0	35.0	402.0	276.0
Dollar Lake												
Number	39	0	0	1,740	143	20	120	74	151	32	1	0
Wt. oz.	471.8	...	...	4,816.0	431.5	68.0	374.8	295.5	491.0	234.0	36.0	...
Devil's Washbasin												
Number	0	0	0	0	30	0	114	39	0	42	0	0
Wt. oz.	...	...	...	...	37.0	...	183.0	68.0	...	139.0	...	...
Loon Lake												
Number	5	0	0	197	36	1	48	0	89	181	0	0
Wt. oz.	119.5	...	...	715.0	99.5	2.0	116.0	...	488.5	461.5	...	...
North Lake												
Number	3	29	0	9	0	0	62	12	0	2	0	0
Wt. oz.	119.0	656.0	...	27.5	...	...	178.5	48.5	...	28.0	...	...
Pintail Pond												
Number	0	0	1	1	3	0	1	0	0	0	0	0
Wt. oz.	...	...	104.0	2.0	4.0	...	1.5	...	...	...	...	...
South Pond												
Number	1	0	0	155	6	0	3	18	0	1	1	0
Wt. oz.	7.0	...	...	497.0	14.0	...	8.0	47.5	...	10.0	8.0	...
Spring Lake												
Number	0	0	0	0	11	0	1,681	0	0	84	0	0
Wt. oz.	...	...	...	...	33.7	...	6,459.0	...	...	132.5	...	...
Teal Lake												
Number	0	0	0	1	0	0	68	0	0	0	0	0
Wt. oz.	...	...	...	3.0	...	...	225.0	...	...	...	...	...
Totals 1952												
	72	84	15	2,178	236	21	3,605	201	249	345	23	1
	1,362.3	1,746.0	785.0	6,352.0	639.2	70.0	10,150.3	611.0	1,073.5	1,040.0	446.0	276.0

Table 9. Combined totals for all Rifle River Area lakes covering an 8-year period from 1945 through 1952.

Year	Total angler-days	Total hours of angling	Total number of fish taken	Total weight of fish taken
1945	2,608	9,303.5	6,192	2,247.13
1946	1,867	5,826.5	5,159	1,523.89
1947	1,922	6,132.0	4,538	1,207.06
1948	2,014	6,996.0	4,042	1,242.75
1949	2,536	7,790.5	4,444	1,675.00
1950	2,427	7,577.0	8,200	2,116.48
1951	1,657	5,348.5	6,469	1,469.45
1952	∇ 1,983	∇ 5,925.0	7,036	1,541.88
Combined totals for 8 years	∇ 17,014	∇ 54,899.0	46,080	130,023.64

∇ Does not include figures for persons engaged only in catching frogs. Totals for years previous to 1952 were taken from annual reports and include froggers.

Small game hunting

The small game season turned out to be the biggest surprise package on the Area's 1952 recreation calendar. Considering the almost static condition that prevailed from 1945 through 1948 in terms of hunting pressure and kill, and the relatively slow increase during the next three years, last year's sharp upswing over the 1951 season seemed almost phenomenal in character. (See Table 11.)

In 1952 almost double the number of hunters bagged more than twice as many grouse and woodcock as were killed the year before. The fact that 48.2% (520) more hunters killed 55% (184) more grouse, and 60.7% (37) more woodcock would seem to indicate a more successful season on the Area's most popular game birds. Other game species, however, did not share a proportional increase in hunter's bags with the grouse and woodcock. The kill of snowshoe hares by small game hunters remained the same (39)¹ and the take of ducks climbed a mere 8.6% (3) above the 1951 figure while cottontail rabbits showed a 41.7% (-7) decline in numbers removed. In addition to the predominant game birds and animals, 1 fox squirrel and 1 pheasant were shot on the Area last year. As usual it was the first few days that proved to be the most productive part of the season. (See Table 10.)

Average weights of the apparently more abundant species were slightly lower while those of the seemingly less plentiful rabbits were somewhat higher than in the 1951 season. Grouse averaged 1.23 pounds in 1952 as compared to 1.28 pounds in 1951, whereas the weight figures for woodcock stood at 0.46 and 0.48, for ducks 2.21 and 2.33, for cottontails 2.44 and 2.34, and for snowshoes 2.69 pounds last year and 2.50 pounds the year before.

¹Two other snowshoes were killed by rifle deer hunters bringing the total to 40.

Table 10. Weekly summary of small game hunting on the Rifle River Area in 1952.

Weekly period	Total hunter days	Total hours of hunting	Number killed							Total number of game birds and animals	
			Grouse	Woodcock	Ducks	Cotton-tail rabbits	Snowshoe hares	Raccoon	Fox squirrel		Pheasants
Jan. 1-4	0	...	...	...	...	...	...	...	...	...	...
Jan. 5-18	12	29.0	...	...	...	1	1	...	...	...	2
Jan. 19-31	9	11.0	...	...	...	0	0	...	...	...	0
Oct. 1-3	106	349.5	67	11	16	1	1	0	0	0	96
Oct. 4-10	364	1,143.0	115	19	5	2	7	0	0	0	148
Oct. 11-17	236	743.0	√ 69	24	2	0	10	0	0	0	√ 105
Oct. 18-24	140	363.5	32	6	6	0	6	0	1	0	51
Oct. 25-31	63	187.0	22	1	4	0	3	0	0	0	30
Nov. 1-7	58	148.5	16	0	1	0	1	0	0	0	18
Nov. 8-14	57	162.0	10	0	1	0	1	0	0	1	13
Dec. 6-12	12	23.0	...	...	0	0	3	...	...	...	3
Dec. 13-19	15	31.0	...	...	...	1	6	...	...	...	7
Dec. 20-26	2	5.0	...	...	...	0	0	...	...	...	0
Dec. 21-31	5	17.0	...	...	...	0	0	0	0	0	0
Note: No small game hunting November 15 - December 5											
Totals	1,079	3,212.5	√ 331	61	35	5	√ 2/2 41	0	1	1	475
Weight (pounds)			407.371	28.03	77.44	12.19	109.75			2.75	643.80

√ 1 Includes one grouse killed by archer deer hunter.

√ 2 Two snowshoes killed by rifle deer hunters on November 16 and November 23.

Table 11. A summary of 8 years of small game hunting on the Rifle River Area.

Year	Total hunter days	Total hours of hunting	Number taken				Others taken ²	Total number shot	Total weight in pounds
			Ducks	Grouse	Woodcock	Rabbits ¹			
1945	325	662.5	25	51	8	3	4	91	163.87
1946	282	694.0	24	39	45	4	13	125	308.19
1947	374	941.5	17	64	28	5	1	115	145.72
1948	306	696.0	6	84	31	4	4	129	190.75
1949	435	1,112.5	72	116	18	11	0	217	349.24
1950	500	1,624.5	38	197	42	53	2	332	489.50
1951	559	1,540.5	32	147	24	51	0	254	403.30
1952	1,079	3,212.5	35	331	61	44	2	472	637.80
Totals for 8 years	3,860	10,484.0	249	1,029	257	175	26	1,735	2,688.37

¹ Includes snowshoes and cottontails.

² Includes pheasants, raccoon, and mink.

Of probable interest to hunters and game men alike is the fact that there was no appreciable slump in hunting quality although hunting pressure was greatly increased. The take of game per hunter hour averaged 0.44 in 1952 as compared to 0.45 in 1951 while pounds per hour stood at 0.20 and 0.26 respectively.

Rifle deer hunting

The 1952 program designed to reduce deer herds in the starvation areas of northern Michigan gave last year's gun hunters on the Rifle River Area their first opportunity to legally shoot antlerless deer since the tract was opened to the public. Falling on the last three days of the regular season (November 28-30), the special season resulted in a bag of 40 does and 8 antlerless bucks in addition to the 28 legal bucks removed throughout the usual 16-day period. (See Table 12.) This additional kill raised the percentage of successful hunter-days from 1.8% in 1951 to a new high of 5.0% last year. (See Table 13.) However, figured on the basis of antlered bucks only (22 in 1951 and 28 in 1952), hunter success remained the same as for the previous year due to the greatly increased hunter participation.

Bow and arrow deer hunting

The 1952 archery season set a new record for the number of bow and arrow hunters pursuing their favorite sport on the Rifle River Area. A total of 309 hunter-days were recorded last year as compared to 9 in 1945 and 252 the year before. This increase in archer activity continued an upward trend that began in 1951 after a 6-year period of comparatively light hunting pressure. (See Table 15.)

Archers removed a total of 2 deer (does) from the Area last year as compared to 3 deer (2 does and 1 buck) in the 1951 season. This brought the total kill for the 8-year period to 8 deer, or an average of 1 deer per season.

Table 12. Rifle deer hunting statistics for the Rifle River Area - 1952
(Deer of either sex legal game for gun hunters last 3 days of
season - November 28, 29 and 30.)

Date	Total hunter days	Total hours of hunting	Number of bucks killed	(Special season only)		Total dressed weight of all deer killed (lbs.)
				Does killed	Antlerless bucks killed	
Nov. 15	215	1,342.0	12			1,321
16	216	946.0	7			810
17	71	197.0	0			...
18	105	528.0	3			325
19	84	297.0	2			216
20	68	340.0	0			...
21	58	196.0	0			...
22	42	89.0	0			...
23	76	297.0	0			...
24	27	72.0	0			...
25	16	31.0	0			...
26	17	45.0	0			...
27	59	226.0	0			...
28	174	706.0	1	14	5	1,690
29	150	639.0	2	19	1	2,007
30	149	472.5	1	7	2	915
Totals	1,527	6,423.5	28	40	8	7,284
1952 increase over 1951	301	1,403.0	6	(Not legal in 1951)		

Note: 2 snowshoe rabbits (total weight 4.75 lbs.) were also killed by rifle
deer hunters (included in small game totals, Table 10)

Table 13. Percentage of successful hunter-days (rifle), and average weights of deer killed during 8 years of deer hunting on the Rifle River Area, 1945-1952

Year	Percentage of hunter-days successful	Average dressed weight of deer killed (lbs.)
1945	2.8	128.0
1946	2.4	120.6
1947	2.5	114.5
1948	1.8	112.0
1949	2.3	106.8
1950	2.6	108.0
1951	1.8	105.0
1952	∇ 5.0 (1.8 bucks only ∇ ²)	∇ 95.8

∇¹ Includes bucks, does, and fawns

∇² Based on bucks with antlers at least 3 inches long

Table 14. Archery deer hunting statistics for the Rifle River Area in 1952
(Deer of either sex legal game for archers in Ogemaw
County in 1952, October 1 - November 5)

Date	Total hunter days	Total hours of hunting	Number killed	Total dressed weight of deer	Other game killed by archers
Oct. 1	21	100.5			
2	26	116.0			
3	37	193.5			
4	59	257.0			
5	32	106.0			
6	11	35.5			
7	6	20.5			
8	6	19.0			
9	9	29.0			
10	5	15.0			
11	13	32.5			1 grouse 21 oz.
12	12	46.0			
13	0	...			
14	2	4.0			
15	0	...			
16	0	...			
17	2	10.5			
18	9	21.0			
19	6	19.5			
20	1	1.5			
21	1	1.5			
22	3	5.5	1 doe	90 lbs.	
23	1	4.0			
24	2	5.0	1 doe	100 lbs.	
25	14	148.5			
26	17	72.0			
27	0	...			
28	0	...			
29	0	...			
30	2	3.0			
31	3	14.0			
Nov. 1	4	19.0			
2	5	13.0			
3	0	...			
4	0	...			
5	0	...			
<hr/>					
Totals					
1952	309	1,212.5	2 does	190 lbs.	1 grouse 21 oz. ^{1/}
Increase					
over 1951	+57	+152.0	-1 buck	-77 lbs.	

^{1/}Included in small game totals (Table 10)

Table 15. Yearly deer hunting statistics over an 8-year period from 1945-1952

Year	RIFLE HUNTING				BOW AND ARROW HUNTING				COMBINED TOTALS			
	Total hunter-days	Total hours of hunting	Number killed	Total weight (lbs.)	Total hunter-days	Total hours of hunting	Number killed	Total weight (lbs.)	Total hunter-days	Total hours of hunting	Number killed	Total weight (lbs.)
1945	1,923	9,346.0	54	6,912	9	20.5	1	160	1,932	9,366.5	55	7,072
1946	2,159	10,268.0	51	6,150	44	132.5	1	130	2,203	10,400.5	52	6,280
1947	1,921	8,806.0	48	5,498	47	142.5	0	...	1,968	8,948.5	48	5,498
1948	1,784	7,915.0	32	3,583	44	114.0	0	...	1,828	8,029.0	32	3,583
1949	1,535	6,985.0	36	3,844	34	54.5	1	104	1,569	7,039.5	37	3,948
1950	1,519	7,098.5	40	4,350	28	45.5	0	...	1,547	7,144.0	40	4,350
1951	1,226	5,020.5	22	2,310	252	1,060.5	3	267	1,478	6,081.0	25	2,577
1952	1,527	6,423.5	√76	7,284	309	1,212.5	2	190	1,836	7,636.0	√78	7,474
Totals for 8 years	13,594	61,862.5	359	39,931	767	2,782.5	8	851	14,361	64,645.0	367	40,782

√ Includes 40 does and 8 antlerless bucks due to special season in 1952.

Table 16. 1952 Trapping Statistics, Rifle River Area

Period or date	Number of permits issued	Number of traps used	Total trap nights	Muskrat		Mink		Raccoon		Beaver		Otter		Total	
				number	pounds	number	pounds	number	pounds	number	pounds	number	pounds	number	pounds
(Beaver Season)															
Mar. 20-31	53	411	55							17	571	1	15	18	586.0
(Muskrat Season)															
Nov. 15															
16	4	161	161	81	188.25									81	188.25
17	4	161	161	19	48.31									19	48.31
18	4	196	196	28	62.00	1	2.12							29	64.12
19	4	171	171	21	46.00									21	46.00
20	3	149	149	8	16.25									8	16.25
21	4	165	181	14	27.75	2	3.38							16	31.13
22	3	149	149	8	18.00									8	18.00
23	3	40	56	7	15.50									7	15.50
24	5	183	308	8	18.25	1	1.50							9	19.75
25	4	167	167	2	4.00	2	4.62							4	8.62
26	2	24	24	1	1.50									1	1.50
27	3	42	60	1	1.50									1	1.50
28	3	42	42	1	2.00									1	2.00
29	3	141	516	7	15.00	1	2.00							8	17.00
30	2	143	161	1	2.00	1	1.12							2	3.12
Dec. 1	0														
2	2	143	286	2	4.75	1	2.50							3	7.25
3	0														
4	2	143	286	1	1.75	1	2.00							2	3.75
5	1	18	18	3	7.00									3	7.00
6	1	18	18	1	2.00									1	2.00
7	1	125	375	3	6.50			1	11.50					4	18.00
8	0														
9	2	143	304	5	9.50									5	9.50
10	0														
11	2	143	286	3	5.75	1	1.75							4	7.50
12	0														
13	0														
14	1	18	54	0		0								0	
15	0														
Totals															
1952	116	3,096	4,184	225	503.56	11	20.99	1	11.50	17	571	1	15	255	1122.05
Increase or decrease from 1951	-28	-141	-811	+58	+139.04	+3	+4.12	-8	-108.19	+11	+352	0	-4	+64	+382.97

Table 17. A summary of 8 years of trapping on the Rifle River Area

Year	Total trapper permits issued	Number taken						Total pelts	Total weight of all animals (lbs.)	Average number of pelts per permit
		Otter	Beaver	Muskrats	Mink	Raccoon	Foxes			
1945	40	Closed season		10	2	2	0	14	42.0	0.35
1946	75	"	"	162	10	0	0	172	393.9	2.29
1947	52	"	"	115	8	1	2	126	294.4	2.42
1948	141	1	20	269	5	9	0	304	1,248.8	2.16
1949	118	0	38	33	7	1	0	79	1,269.4	0.67
1950	86	0	6	193	9	0	0	208	689.2	2.42
1951	144	1	6	167	8	9	0	191	739.1	1.33
1952	116	1	17	225	11	1	0	255	1,122.1	2.20
Totals for 8 years	772	3	87	1,174	60	23	2	1,349	5,798.9	1.75

Table 18. General use statistics for the Rifle River Area covering an 8-year period, 1945 through 1952

Year	Total permits issued	Number of permits issued to sightseers	Percentage of total permits issued to sightseers	Number of permits issued to anglers ^{1/}	Percentage of total permits issued to anglers	Number of permits issued to hunters	Percentage of total permits issued to hunters	Number of permits issued to trappers	Percentage of total permits issued to trappers	Percentage over-all gain or loss over previous years
1945	16,370	9,993	61.0	4,080	24.9	2,257	13.8	40	0.2	
1946	14,717	8,861	60.2	3,294	22.4	2,487	16.9	75	0.5	10.1 loss
1947	16,818	10,543	62.7	3,881	23.1	2,342	13.9	52	0.3	12.5 gain
1948	17,078	10,627	62.2	4,176	24.5	2,134	12.5	141	0.8	1.5 gain
1949	19,443	12,986	66.8	4,335	22.3	2,004	10.3	118	0.6	11.8 gain
1950	19,709	12,454	63.2	5,042	25.6	2,127	10.8	86	0.4	1.3 gain
1951	19,769	13,074	66.1	4,514	22.8	2,037	10.3	144	0.7	0.1 gain
1952	21,167	14,176	67.0	3,959	18.7	2,915	13.8	117	0.6	6.6 gain
Totals and average percentages	145,071	92,714	63.9	33,281	22.9	18,303	12.6	773	0.5	

100

^{1/} Includes permits issued to frog hunters.

Fig. 1. Upward trend in condition factor (C) of largemouth bass from Dollar and Devoe lakes during eight years of angling (1945-1952). Included are the numbers of specimens on which the annual averages are based. For Devoe Lake in 1946 and 1949 the numbers of available records were insufficient for a reliable average.

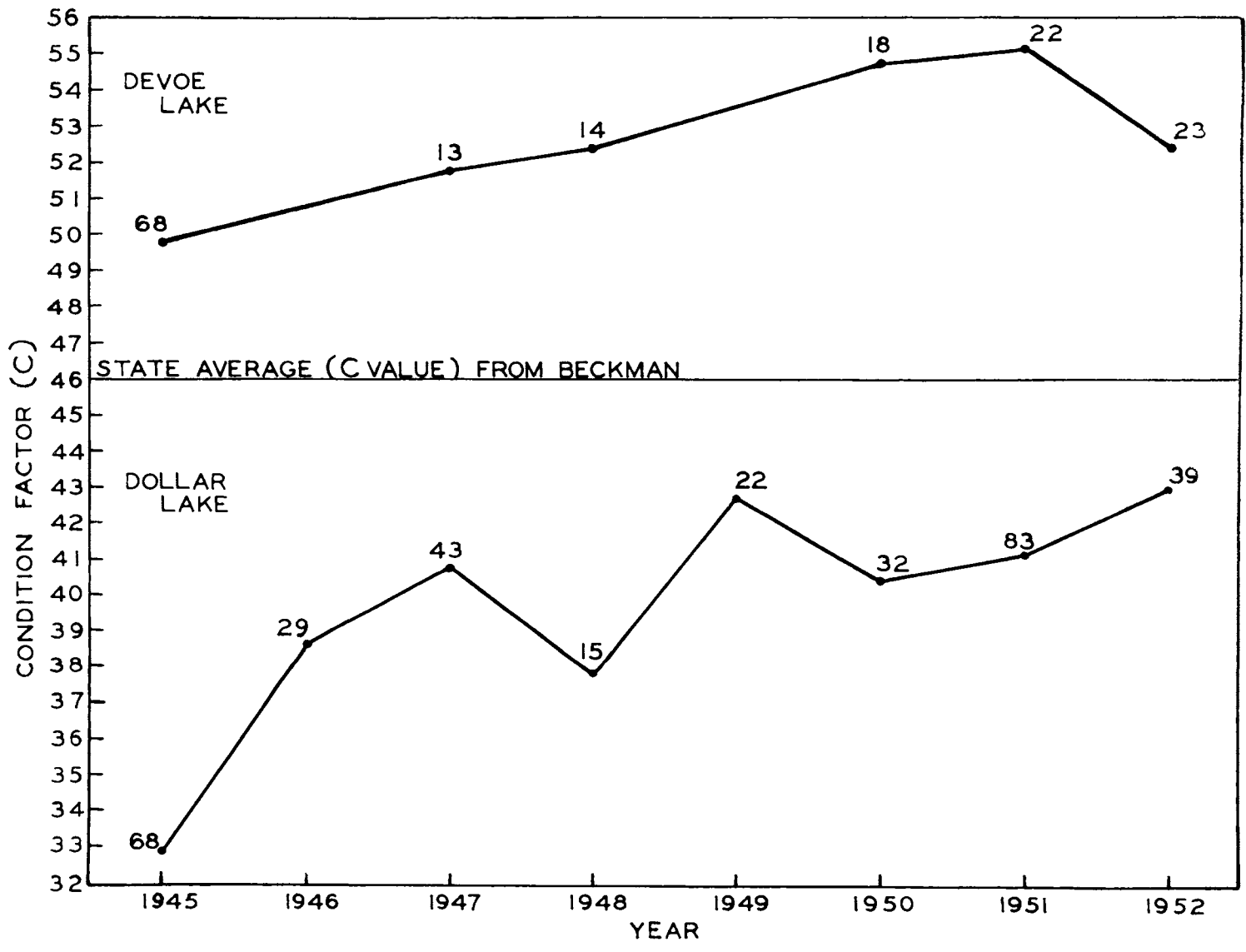
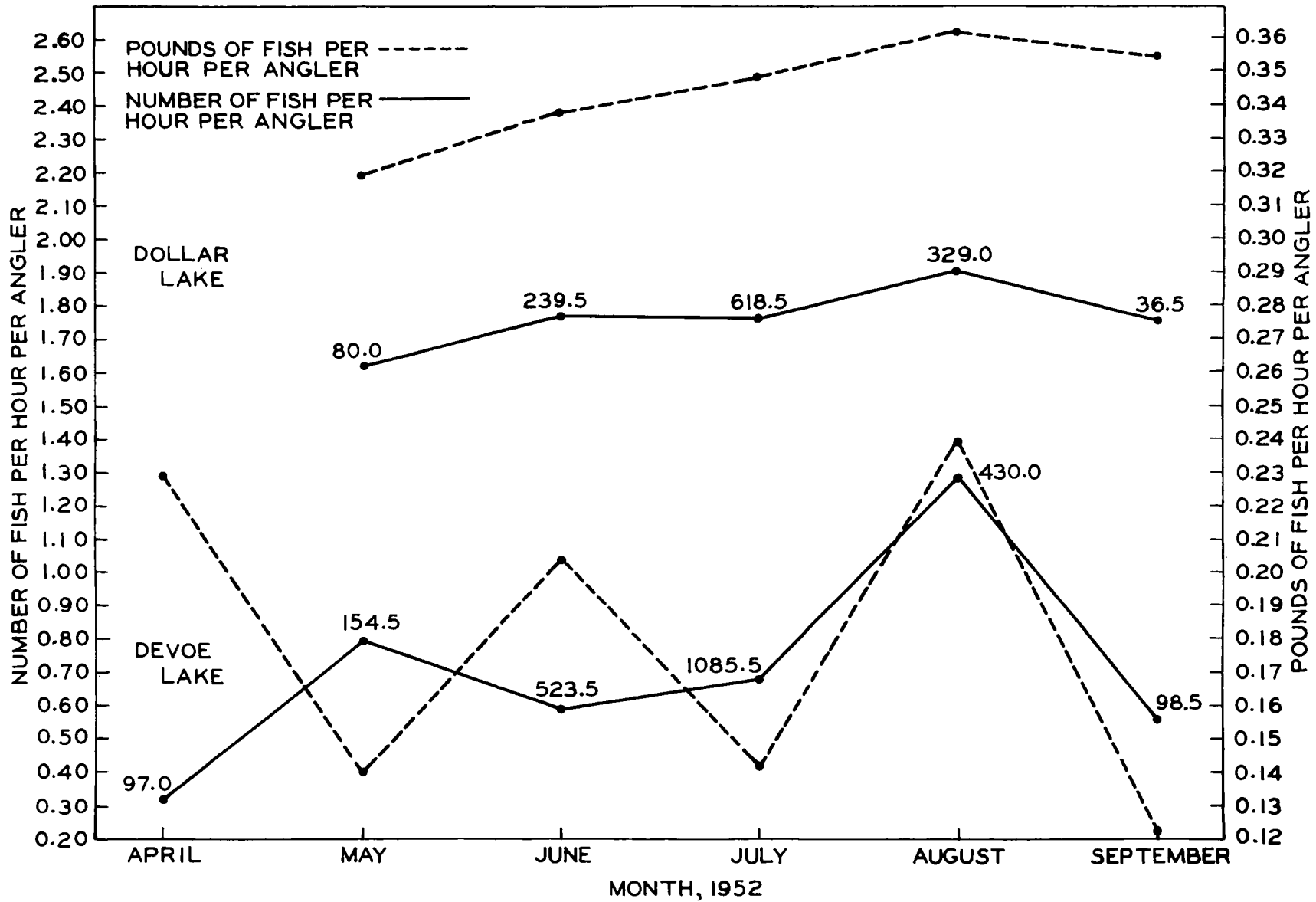


Fig. 2. Monthly trends in angling quality on the Rifle River Area's most fished lakes (Dollar and Devoe) during 1952. Numbers are the total hours of angling. Upper curves are for Dollar Lake, lower curves for Devoe Lake.



Activities

Stepped-up fisheries investigations went along with increased public usage of the Area last year. David L. Shull under the direction of Fisheries Biologist, Frank F. Hooper started several experiments on North Lake and Pintail Pond searching for ways to improve production in this relatively non-productive type of water. The knotty problems they are attempting to solve include the determination of factors controlling plant growth in marl lakes, the way in which marl is formed, and the effects of fertilization on this particular type of lake. Other fisheries research activities outside the routine information collected by creel census clerks included trout population studies on Houghton Creek and the Rifle River by Junior Fisheries Biologist Howard Gowing, and the investigation of sea lamprey depredations in Devoe Lake by Fisheries Research Technician Truman Guard. Mr. Gowing came to the Area in 1952 as the first resident biologist, although Dr. David S. Shetter, who is in charge of the Hunt Creek Fisheries Experiment Station, continued to supervise the over-all research program as he has done since the Rifle River Area was opened to the public eight years ago.

More complete information on Area activities prior to 1952 may be found in reports, 1031, 1032, 1108, 1150, 1235, 1301, 1302, and 1345 by David S. Shetter. (See Table 18 for brief summary.) A report on the Rifle River Area trout streams now being written by Howard Gowing and reports on the individual lakes being prepared by the author promise to give more complete information on fisheries investigations than can possibly be included here.

The Staff

In 1952 the general operation of the Rifle River Area was under the supervision of Basil V. Hughes, Lake Mapping Supervisor I, who was assisted by Arthur W. DeClaire, Fisheries Research Technician A. Biologist, Howard Gowing, was in charge of biological research, and Charles J. Kohn, Trades Helper B, and