

NOONTOOTLA—A SIXTEEN-YEAR CREEL AND USE HISTORY OF A SOUTHERN APPALACHIAN TROUT STREAM UNDER CHANGING MANAGEMENT REGULATIONS¹

by

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ABSTRACT

Sixteen years of creel and use data on Noontootla Creek in the southern Appalachian mountains of northern Georgia from 1954 to 1969 are presented. Changes in fishing pressure, catch rates, and use patterns under three types of management regulations—general regulations from 1954-1963 except for 1960 when the stream was designated “artificials only”, and “artificials only catch-and-release” regulations from 1964-1969—are discussed. Noontootla is a wildlife management area stream fished under a permit check in-check out system allowing a nearly complete survey. A total of 17,445 anglers were surveyed. The survey revealed a decrease in daily fishing pressure under “artificials only” regulations and a substantial decrease under “catch-and-release” regulations. The use data revealed a decrease in hours/mean angler day with increasingly restrictive regulations: 4.62, 3.70, and 3.26 for general, “artificials only”, and “catch-and-release”, respectively. Anglers catching at least one fish fished on the average longer than unsuccessful anglers. Throughout the survey period successful anglers fished 1.7 hours longer per angler day than unsuccessful anglers. Success—catching at least one fish—averaged 71.1 per cent for the survey period, slightly less (64.1 per cent) under “catch-and-release” regulations than general regulations (72.2 per cent). However, successful anglers averaged 6.6 fish/trip under “catch-and-release” regulations and 5.1 under general regulations. After initiation of “catch-and-release” regulations and drastic reduction in stocking intensity, natural reproduction and stocking carryover were sufficient to sustain a high catch rate. Associated with the decrease in hours/angler day with increasingly restrictive regulations, the catch/hour for successful anglers increased from 1.0 to 1.7. No distinct use patterns were evident other than differences in angling pressure on the four days of the week the stream was open. The majority of angler use after “catch-and-release” regulations were initiated was from urban anglers. Stocking rate and creel-return of stocked fish, type of lure or bait used, and length frequencies of stream-reared fish brought to creel are discussed. Of the anglers responding to a questionnaire in 1969, 79.8 per cent preferred the “catch-and-release” concept as it was or with slight modifications.

INTRODUCTION

Noontootla Creek, a trout stream located in northeastern Georgia in the southern extremities of the Appalachian Mountains, has been fished under different management regulations during its history as a wildlife management area stream. Creel data, collected continuously over a 16-year period from 1954 to 1969, permit an evaluation of catch rates and angler use patterns under the various management procedures.

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DESCRIPTION OF THE AREA

Noontootla Creek is located in Fannin County, flowing northwest to its confluence with the Toccoa River. Noontootla, in the Tennessee drainage, forms on the north slopes of Blue Ridge. Approximately 6.7 miles of the upper portion of the stream are within the Upper Blue Ridge Wildlife Management Area on the Chattahoochee National Forest. It has a mean gradient of 163 feet per stream mile on the management area. Total hardness is extremely low—around 4 ppm CaCO_3 . Brook (*Salvelinus fontinalis*), rainbow (*Salmo gairdneri*), and brown (*Salmo trutta*) trout are found in the stream system.

MANAGEMENT HISTORY

Noontootla Creek was designated a managed stream on the Upper Blue Ridge Wildlife Management Area in 1950. Since then, it has been open to fishing under a permit system. From 1950 to 1963, exclusive of 1960, the stream was managed under general management area trout stream regulations. During the 1960 season, Noontootla was restricted to artificial lures only. During this entire period, it was open two days a week—Wednesday and Thursday in May and July and Saturday and Sunday in June and August. The trout season on the management areas extends from the first of May to Labor Day. Anglers are required to check out prior to dark. The only major change in management regulations during this period, in addition to changes in the permit system, was a decrease in daily creel limit from ten fish to eight in 1958.

In 1964, Noontootla was designated a "catch-and-release" stream restricted to artificial lures. Anglers were required to release all fish caught except those exceeding 16 inches. The stream was open four days a week during this period, on Saturday, Sunday, Wednesday, and Thursday.

METHODS

The creel census was conducted each day the stream was open by temporary employees located in a check station on the management area. Anglers were required to secure a permit prior to fishing and to report back through the check station before leaving the management area. The creel clerk retained the angler's fishing license at the check station until completion of fishing. This ensured a nearly complete census.

The creel clerk recorded the time, to the nearest half hour, each individual angler spent fishing and if successful or unsuccessful. For the purpose of this census, an angler was recorded as being successful if he brought at least one fish to creel. The creel of each individual angler was recorded for the years 1955-1959 and 1964-1969. State of residence and bait or lure used were tabulated for the years 1954-1958. After designation as a "catch-and-release" stream in 1964, state and county of residence, estimated one-way trip mileage, and type of artificial lure used, were recorded for each angler.

Each angler's catch was examined by the creel clerk and tabulated by species and inch class (total length), except for 1960 when the size was not recorded. The size of both stream-reared and stocked fish was measured from 1954 to 1957; from 1958 to 1963 only stream-reared fish were measured. After designation as a "catch-and-release" stream, the angler reported the number brought to creel and the number considered stream-reared and stocked. Any fish exceeding 16 inches was identified to species and measured by the creel clerk.

Stocked fish were marked for identification by clipping of the left or right pelvic fin, beginning with the left pelvic in 1954 and alternating each year. Fish were stocked throughout the management area season, after an initial pre-season stocking, at weekly or biweekly intervals. The stocking in 1964, the first year as a "catch-and-release" stream, was a single preseason stocking of 2500 fish.

RESULTS

Use Patterns—Angling pressure on Noontootla Creek increased from 17.4 anglers per day in 1954 to 55.2 in 1959, decreasing to 35.3 anglers per day in 1960 when the stream was designated “artificials only” (Table 1, Figure 1). Angling pressure decreased to 6.8 anglers per day the first year the stream was designated “catch-and-release”.

Anglers spent a mean of 4.62 hours/angler day under general management area trout regulations, decreasing to 3.70 under “artificials only” and 3.26 under “catch-and-release” (Tables 2 and 3, Figure 2). Successful anglers spent 5.09, 3.93, and 3.97 hours/mean angler day under general, “artificials only”, and “catch-and-release”, respectively. The mean angler day of unsuccessful anglers also decreased with increasingly restrictive regulations, reduced to 2.00 hours under “catch-and-release” management. Anglers catching the creel limit spent a mean angler day ranging from 4.91 to 5.98 hours from 1955 through 1959.

Seasonal and Weekly Use Patterns—The data revealed no distinct monthly pattern of angler use (Table 4). The use pattern prior to 1964 was influenced by the stream being open only two days a week during the month. During this period, most of the angling pressure usually occurred in June. However, in some years, heaviest pressure occurred during August. After 1964, when the stream was open four days a week, angler use patterns became even more unpredictable.

Weekly use patterns changed with opening the stream four days a week instead of two. From 1954 through 1963, when Noontootla was open two days a week, Saturdays-Sundays and Wednesdays-Thursdays in alternate months, Saturday consistently received the most pressure, followed by Wednesday, Sunday, and Thursday (Table 5). However, when the stream was opened to four days a week in 1964, while Saturday still received the heaviest pressure, Sunday received nearly twice the pressure it did from 1954 through 1963. Wednesday and Thursday received little pressure.

Saturday anglers consistently fished longer than anglers fishing the other days from 1954 through 1963, averaging 0.5 hours more per mean angler day. From 1964 through 1969, Wednesday anglers fished 0.7 hours longer than anglers fishing on Saturday, Sunday, or Thursday.

No distinct weekly pattern was evident in the distribution of angler trip mileage.

Catch Rates—The mean catch rate increased from 0.80 to 0.96 to 1.30 fish per hour under general, “artificials only”, and “catch-and-release” regulations, respectively (Table 2, Figure 3). Anglers catching fish caught fish at the rate of 1.01, 1.23, and 1.74 per hour with increasingly restrictive regulations. Anglers catching the limit caught fish at catch-rates ranging from 1.38 to 2.04 fish per hour from 1955 through 1959.

Anglers caught fish at the rate of 3.7, 3.6, and 4.2 fish per trip under general, “artificials only”, and “catch-and-release” regulations, respectively (Figure 4). However, when the “catch-and-release” data are analyzed without the 1964 data to eliminate the bias attributable to the high 1964 catch rate, the fish per trip averaged 3.7. The stocking of 2500 rainbow made in 1964 contributed to this high catch rate. Only 400 fish were stocked from 1965 through 1969. Anglers catching fish caught 5.1, 4.8, and 6.1 (1964 data eliminated) fish per trip with increasingly restrictive regulations.

Monthly Catch Rates of Stream-reared Fish—The mean catch rate of stream-reared fish decreased from 0.21 fish/hour in May to 0.14 in August during the period 1954-1963 when anglers were permitted to keep their limit of 10 or 8 fish (Table 6). This was an increase from 4.8 to 7.1 hours per stream-reared fish brought to creel. However, after the stream was designated “catch-and-release”, the mean catch rate remained stable from May to July and

decreased in August to 0.69 fish/hour. The mean annual catch rate of stream-reared fish increased gradually from 1964 to 1969.

Length Frequencies of Stream-reared Fish—Length frequency data were obtained on stream-reared fish from 1958 through 1963, exclusive of 1960. During this period, 3000 brook, 3784 rainbow, and 318 brown trout were brought to creel. The greatest number of brook trout caught were 6 inches, while the largest brought to creel was 13 inches (Figure 5). The highest percentage of rainbow harvested were 7 inches, with the largest 15 inches. Brown trout exceeded rainbow and brook in maximum length, providing the angler with a limited opportunity to catch trophy fish. All fish exceeding 16 inches were brown trout. However, brown comprised only a small percentage (6.1) of the stream-reared fish brought to creel from 1954 through 1963: the majority were rainbow (55.5 per cent), with brook averaging 38.4 per cent of the harvest.

Creel Return of Stocked Fish—A total of 59,353 trout of all three species were stocked from 1954 through 1963. The highest return (74.7 per cent) was obtained with rainbow, with the creel return of brook averaging 71.7 per cent for the 10-year period (Table 7). A fairly high return was obtained with brown (60.0 per cent), although many of these survived the season and were not harvested until the following year or later. The creel return of all three species averaged 72.5 per cent for the period.

Bait and Lures—Use of artificial lures from 1954 through 1958 averaged 8.9 per cent, ranging from 3.4 to a high of 23.6 per cent. Most anglers (54.4 per cent) preferred to use spinners, with a high percentage (38.6) using flies, after the stream was designated "catch-and-release" (Figure 6). A small percentage used small plugs and rubber imitations.

Angler Residence—Non-resident angler use of Noontootla Creek averaged 2.1 per cent from 1954 through 1958, varying from 1.5 to 2.3 per cent. Most of the non-resident anglers were from the adjacent states of Tennessee, North Carolina, South Carolina, Alabama, and Florida, with the highest percentage from nearby Tennessee.

The residence data for the period 1964-1969 revealed that approximately half of the angler use of the "catch-and-release" fishery is by anglers from urban areas (Figure 7). Most of these are from Cobb, Dekalb, and Fulton counties—Atlanta and its environs. A high percentage of angler use also comes locally from Fannin County, and, with the other mountain counties, accounts for nearly 42 per cent. A small percentage of anglers come from middle and south Georgia. Non-resident anglers, most from adjacent states, comprise approximately 4.0 per cent of the angler use.

Angler Critique—Of the anglers responding to a 1969 questionnaire soliciting their comments and suggestions on the "catch-and-release" management on Noontootla, 79.8 per cent recommended retaining the stream under its present regulations or with slight modification (Table 8). Only 4.0 per cent of those responding recommended returning the stream to general management regulations with no restriction on bait. A small percentage recommended more restrictive regulations, e.g., restrict to fly-fishing only and prohibit treble hooks.

DISCUSSION

The data indicate that the weekly use pattern can be adjusted by changing the pattern of days available for anglers to utilize the resource. When Noontootla was open to fishing two days a week, weekend and midweek during alternating months, Saturday and Wednesday received the heaviest pressure. In addition, Saturday anglers consistently fished longer. When the stream was open four days a week, most of the pressure was shifted to the weekend, with midweek receiving little pressure. However, Wednesday anglers then

consistently fished longer. This type information on use patterns could be of value to hatchery managers for determining stocking patterns.

Daily angler use decreased with increasingly restrictive regulations. In addition, the mean angler day decreased nearly 1.4 hours under "catch-and-release" regulations from the length of time expended per day by anglers under general regulations. However, the mean catch rate trend was inversely related to this decrease in mean angler day, increasing 0.5 fish per hour. The mean catch per trip did not increase with increasingly restrictive regulations when the high 1964 catch rate is eliminated to remove the bias attributable to the high stocking intensity. Catch per trip even decreased under "artificial only" regulations. Catch per trip increased almost one fish under "catch-and-release" as compared with general regulations when successful anglers were considered. It appears then that anglers utilizing the resource under restrictive regulations, while catching fish at a higher rate, are content to spend less time fishing and catch even less fish per trip compared to anglers fishing under general regulations.

Anglers succeeding in catching the daily creel limit fished only a few minutes longer per mean angler day than those anglers catching fish but quitting short of the limit. Their considerably higher catch rate indicates that this segment of the angling population are more capable trout fishermen or fish under better fishing conditions.

The higher catch rate of stream-reared fish, remaining stable throughout the season until August, when it decreases probably because of more difficult late summer fishing conditions, reveal that natural reproduction is sufficient to sustain a "catch-and-release" fishery. To further substantiate this, the mean annual catch rate of stream-reared fish gradually increased over the 6-year period following designation as a "catch-and-release" stream.

Although the majority of angler use is by anglers from urban counties, most of these from Atlanta and the surrounding area, the high percentage of angler use from Fannin County indicate acceptance and utilization of the "catch-and-release" fishery by local anglers.

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Table 1. Annual creel census data for Noontootla Creek for the period 1954-1969.

Year	Angler Trips			Angler Harvest			Catch Rate(fish/hr.)			Catch/Trip	
	Per Year	Per Day	Total Hours	Success (%)	Total	Stream-Reared (%)	All Anglers	Succ. Anglers	All Anglers	Succ. Anglers	
1954	626	17.4	2988.5	70.3	2396	48.5	0.80	1.08	3.83	5.45	
1955	611	19.1	3282.0	74.0	2547	23.0	0.78	0.98	4.17	5.63	
1956	1020	27.6	4665.0	72.8	3825	20.9	0.82	1.08	3.75	5.15	
1957	1402	41.2	6488.0	68.6	4839	20.7	0.75	0.97	3.45	5.03	
1958	1675	46.5	7461.5	75.9	6242	17.8	0.84	1.01	3.73	4.91	
1959	1987	55.2	9819.0	70.9	7487	24.5	0.76	0.93	3.77	5.31	
1960	1129	35.3	4182.5	74.1	4031	28.2	0.96	1.23	3.57	4.82	
1961	2296	71.7	10132.0	63.6	6620	26.2	0.65	0.92	2.88	4.53	
1962	1863	58.2	8079.0	77.9	8203	19.6	1.02	1.19	4.40	5.65	
1963	2177	54.4	10134.0	77.1	8617	9.4	0.85	1.01	3.96	5.14	
1964	513	6.8	1700.0	76.2	3288	29.3	1.93	2.27	6.41	8.41	
1965	422	5.6	1433.0	55.5	1598	70.1	1.12	1.47	3.79	6.83	
1966	459	6.5	1423.0	57.7	1355	91.3	0.95	--	2.95	5.11	
1967	333	4.6	1152.0	72.1	1624	68.2	1.41	1.67	4.88	6.77	
1968	487	6.7	1501.0	56.9	1714	92.9	1.14	1.61	3.52	6.19	
1969	445	6.2	1453.5	67.0	1713	93.5	1.18	1.49	3.85	5.75	
Total	17445	22.2	75894.0	71.1	66099	29.4	0.87	1.09	3.79	5.33	

Table 2. Comparison of daily angling pressure, success rate, length of mean angler day, and catch rates on Noontootla Creek under, general, "artificials only", and "catch-and-release" management regulations. The figures in parentheses are the means of the "catch-and-release" data analyzed with the 1964 data eliminated to remove the bias attributable to the high 1964 catch rate where this significantly affected the mean.

	<u>General</u>	<u>Artificials Only</u>	<u>Catch-and-Release</u>
Anglers/Day	43.4	35.3	6.1
Per Cent Success	72.2	74.1	64.1 (61.2)
Mean Hours/Angler Day	4.62	3.70	3.26
Hours/Succ. Angler	5.09	3.93	3.97
Hours/Unsucc. Angler	3.38	3.06	2.00
Catch Rate (fish/hour)			
All Anglers	0.80	0.96	1.30
Succ. Anglers	1.01	1.23	1.74
Mean Catch/Trip			
All Anglers	3.72	3.57	4.25 (3.73)
Succ. Anglers	5.15	4.82	6.62 (6.09)

Table 3. Hours per mean angler day of all anglers, unsuccessful anglers (bringing no fish to creel), and successful anglers (bringing at least one fish to creel) fishing Noontootla Creek from 1954 to 1969.

Year	All Anglers	Unsuccessful Anglers	Successful Anglers		
			Catching Less Than Limit	Catching Limit	All Succ. Anglers
1954	4.77	4.13	--	--	5.05
1955	5.37	4.28	5.70	5.98	5.76
1956	4.57	4.07	4.73	4.91	4.76
1957	4.63	3.38	5.14	5.47	5.20
1958	4.45	3.20	4.75	5.10	4.85
1959	4.94	3.06	5.67	5.81	5.71
1960	3.70	3.06	--	--	3.93
1961	4.41	3.49	--	--	4.94
1962	4.34	2.85	--	--	4.76
1963	4.66	3.18	--	--	5.09
1964	3.31	2.05	--	--	3.71
1965	3.40	1.84	--	--	4.65
1966	3.10	--	--	--	--
1967	3.46	1.94	--	--	4.05
1968	3.08	2.07	--	--	3.85
1969	3.27	2.08	--	--	3.85

Table 4. Percentage of the annual angler use occurring during the four months of the management area trout season on Noontootla Creek from 1954 to 1969.

<u>Year</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>
1954	20.6	35.3	21.6	22.5
1955	24.2	34.7	16.7	24.4
1956	26.8	32.0	15.5	25.7
1957	25.7	39.7	11.3	23.3
1958	20.2	33.0	21.0	25.8
1959	16.4	30.4	23.4	29.8
1960	18.0	38.7	22.0	21.3
1961	21.0	28.7	22.3	28.0
1962	17.9	30.0	17.1	35.0
1963	22.6	30.4	14.6	32.4
1964	25.9	20.7	22.6	30.8
1965	34.4	19.9	24.9	20.8
1967	31.3	25.5	22.8	20.4
1968	22.6	19.9	15.0	42.5
1969	26.3	21.8	30.6	21.3

Table 5. Percentage of the annual angler use in angler trips and angler hours occurring on the four days of the week open to fishing on Noontootla Creek from 1954 to 1969. The figures in parentheses are the hours per mean angler day.

<u>Year</u>	<u>Saturday</u>		<u>Sunday</u>		<u>Wednesday</u>		<u>Thursday</u>	
	<u>Trips</u>	<u>Hours</u>	<u>Trips</u>	<u>Hours</u>	<u>Trips</u>	<u>Hours</u>	<u>Trips</u>	<u>Hours</u>
1954	38.5	40.5	19.2	19.0	31.1	30.3	11.2	10.2
1955	39.9	43.1	19.2	16.0	31.4	30.9	9.5	10.0
1956	40.2	41.7	18.2	17.2	33.8	35.5	7.8	5.6
1957	46.2	47.2	16.8	15.4	28.5	29.1	8.5	8.3
1958	41.3	46.1	17.5	15.7	32.7	29.8	8.5	8.4
1959	42.7	45.7	17.5	16.1	31.8	30.6	8.0	7.6
1960	38.0	37.9	22.1	21.3	33.7	35.3	6.2	5.5
1961	41.1	45.2	15.6	16.4	33.1	29.9	10.2	8.5
1962	47.3	49.6	17.7	16.9	26.9	24.5	8.1	9.0
1963	46.4	48.3	15.7	14.7	28.2	27.6	9.7	9.4
Mean (54-63)	42.9	45.6 (4.83)	17.4	16.4 (4.29)	30.9	29.7 (4.37)	8.8	8.3 (4.30)
1964	48.4	48.7	31.4	29.2	10.3	13.7	9.9	8.4
1965	40.8	39.2	33.4	33.9	10.9	12.0	14.9	14.9
1967	41.2	43.5	29.7	26.7	21.3	22.9	7.8	6.9
1968	51.3	52.1	30.4	26.6	13.1	15.9	5.2	5.4
1969	47.9	42.1	27.9	31.4	11.0	12.9	13.2	13.6
Mean (64-69)	46.4	45.4 (3.22)	30.6	29.7 (3.19)	12.9	15.1 (3.87)	10.2	9.8 (3.18)

Table 6. Monthly catch-rates (fish/hour) of stream-reared fish in Noontootla Creek from 1954 to 1969. The figures in parentheses are the mean lengths of time in hours expended in catching one stream-reared fish.

Year	May	June	July	August	Mean
1954	0.44	0.33	0.38	0.46	0.39
1955	0.19	0.16	0.24	0.16	0.18
1956	0.12	0.21	0.15	0.19	0.17
1957	0.17	0.13	0.26	0.12	0.15
1958	0.17	0.16	0.11	0.15	0.15
1959	0.24	0.21	0.17	0.16	0.19
1960	0.29	0.29	0.26	0.25	0.27
1961	0.24	0.21	0.15	0.12	0.17
1962	0.29	0.29	0.12	0.12	0.20
1963	0.13	0.07	0.09	0.05	0.08
Mean (54-63)	0.21 (4.78)	0.19 (5.17)	0.17 (5.96)	0.14 (7.13)	0.18 (5.70)
1964	0.58	0.74	0.50	0.51	0.57
1965	0.88	0.55	0.90	0.76	0.78
1966	--	--	--	--	0.87
1967	0.97	0.89	1.31	0.74	0.96
1968	1.35	1.40	1.14	0.67	1.06
1969	0.92	1.21	1.28	0.96	1.10
Mean (64-69)	0.94 (1.07)	0.97 (1.03)	0.97 (1.03)	0.69 (1.45)	0.88 (1.14)

Table 8. Recommendations and comments of 99 anglers responding to a 1969 questionnaire soliciting suggestions on the "catch-and-release" management regulations on Noontootla Creek.

Recommend retaining "catch-and-release" management	79.8%
Retain present regulations	50.5%
Modify present regulations ¹	29.3%
Reduce size limit ²	13.1%
Restrict to fly fishing	6.1%
Prohibit treble hooks	1.0%
Stock under present regulations	9.1%
Permit keeping 1 or 2 fish ³	3.0%
Close stream for varying periods	2.0%
Recommend return to general management regulations	4.0%
Recommend stocking (no comments on regulations)	10.1%
Miscellaneous comments (<i>e.g.</i> , siltation, directional signs)	4.0%
Facetious comments	2.0%

¹The percentage anglers recommending the various regulation changes under this subheading total more than 29.3% of the total respondents due to more than one comment per questionnaire.

²Most anglers making this recommendation suggested reducing the size limit to 14 inches.

³This suggestion was made to permit keeping of any critically injured fish under the legal size limit.

Table 7. Creel return of hatchery-reared rainbow, brook and brown trout stocked in Noontootla Creek watershed on Upper Blue Ridge Wildlife Management Area from 1954 to 1963. The numbers and percentages recovered for each year are the returns of fish stocked during that season. The numbers and percentages recovered in the species total column are the ultimate returns including carryover from previous seasons' stockings.

	<u>1954</u>	<u>1955</u>	<u>1956</u>	<u>1957</u>	<u>1958</u>	<u>1959</u>	<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>Species Total</u>
<u>Rainbow Trout</u>											
Number Stocked	1441	1444	1700	2600	2800	2692	1400	2200	7963	7095	31335
Number Recovered	727	1053	1596	1835	2198	2047	614	1898	5667	5557	23192
Per Cent Recovered	50.5	72.9	93.9	70.6	78.5	76.0	43.9	86.3	71.2	78.3	74.7
Carryover	--	7	3	28	30	15	13	23	9	81	209
<u>Brook Trout</u>											
Number Stocked	897	1150	1550	2289	2650	4246	2744	4400	1195	2697	23818
Number Recovered	500	731	1229	1759	2208	3200	2118	2523	774	1958	17000
Per Cent Recovered	55.7	63.6	79.3	76.8	83.3	75.4	77.2	57.3	64.8	72.6	71.7
Carryover	--	4	1	2	17	2	21	13	26	0	86
<u>Brown Trout</u>											
Number Stocked	0	200	500	700	700	500	500	900	0	200	4200
Number Recovered	--	164	195	174	470	288	125	341	--	200	1957
Per Cent Recovered	--	82.0	39.0	24.9	67.1	57.6	25.0	37.9	--	100.0	60.0
Carryover	--	--	2	38	207	98	2	87	123	7	564
<u>Total</u>											
Number Stocked	2338	2794	3750	5589	6150	7438	4644	7500	9158	9992	59353
Number Recovered	1227	1948	3020	3768	4876	5535	2857	4762	6441	7715	42149
Per Cent Recovered	52.5	69.7	80.5	67.4	79.3	74.4	61.5	63.5	70.3	77.2	72.5
Carryover	--	11	6	68	254	115	36	123	158	88	859

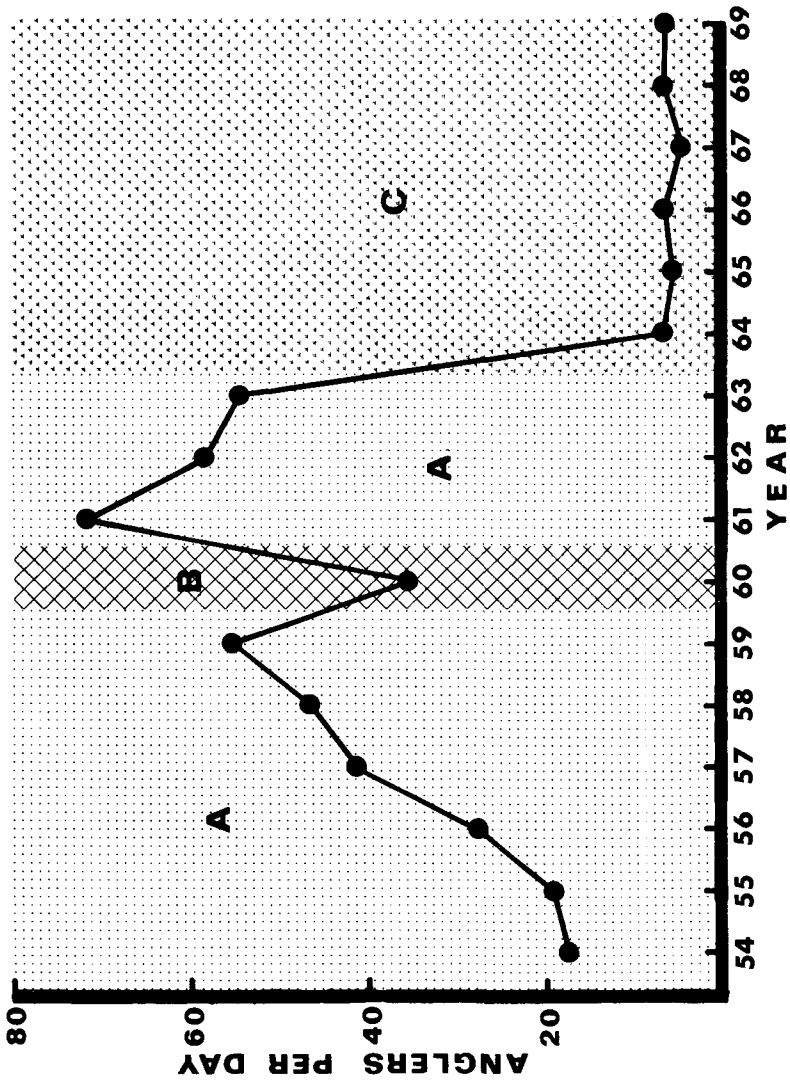


FIGURE 1. Annual variation of mean daily angler use (anglers per day) on Noontootla Creek from 1954 to 1969 (A = general, B = "artificial only", and C = "catch-and-release" regulations).

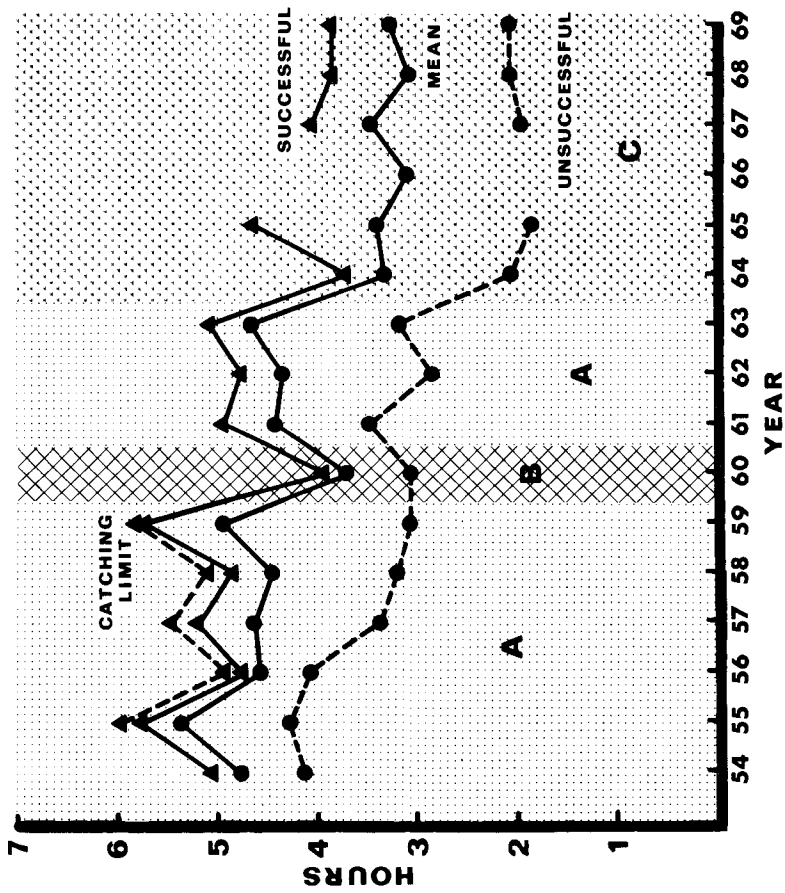


FIGURE 2. Annual fluctuation in the length (hours) of the mean angler day on Noontootla Creek from 1954 to 1969 (A = general, B = "artificial only", and C = "catch-and-release" regulations).

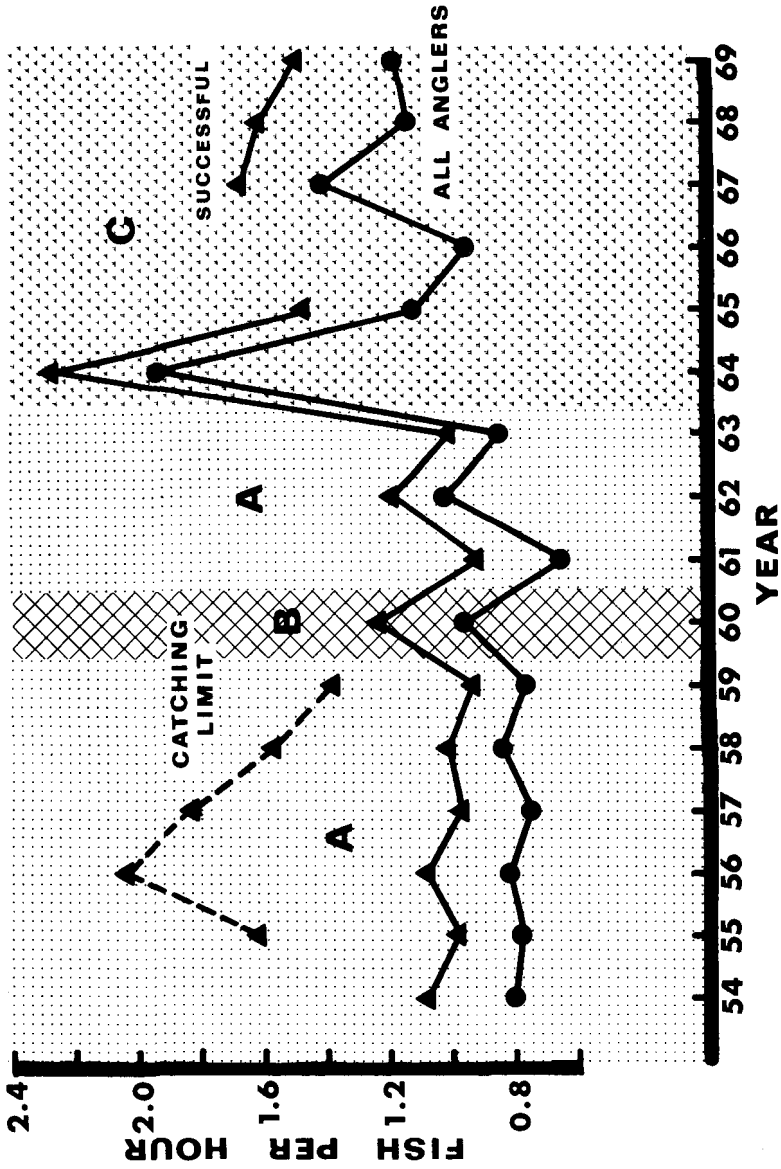


FIGURE 3. Annual fluctuation of the mean catch rate (fish/hour) on Noontootla Creek from 1954 to 1969 (A = general, B = "artificial only", and C = "catch-and-release" regulations).

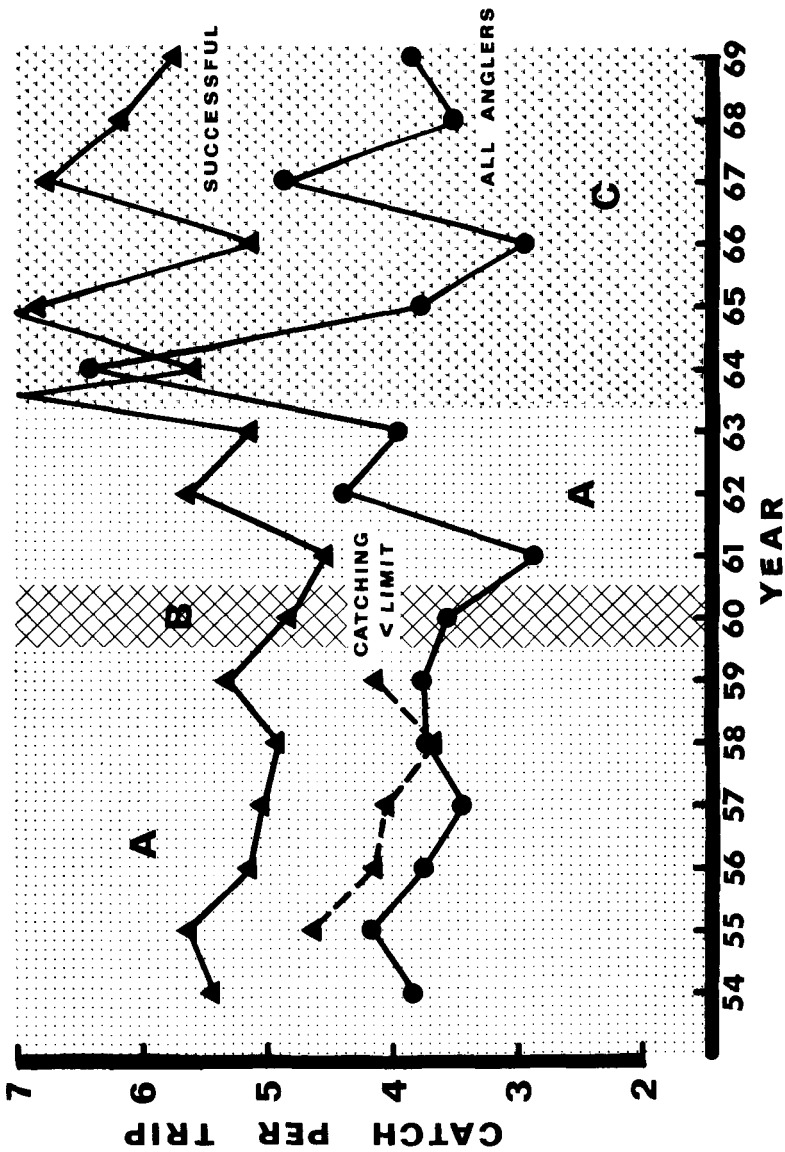


FIGURE 4. Annual fluctuation of the mean daily creel (catch/trip) on Noontootla Creek from 1954 to 1969 (A = general, B = "artificial only", and C = "catch-and-release" regulations).

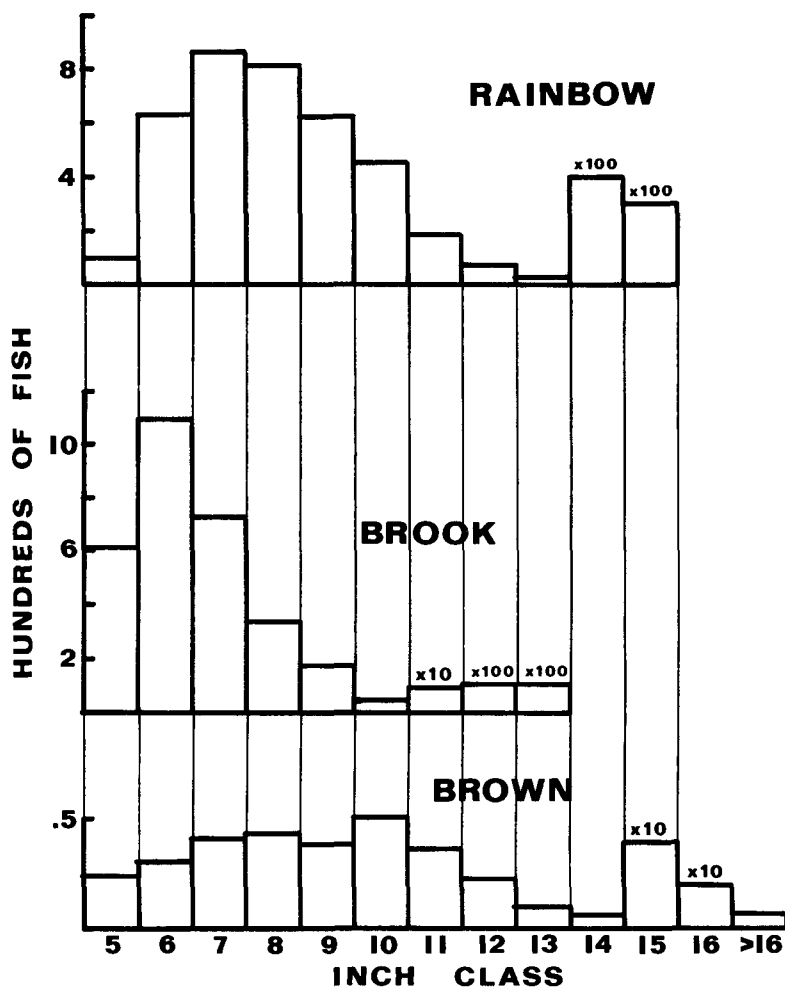


FIGURE 5. Length frequencies of stream-reared rainbow, brook, and brown trout in the 1958-1963 angler harvest on Noontootla Creek.

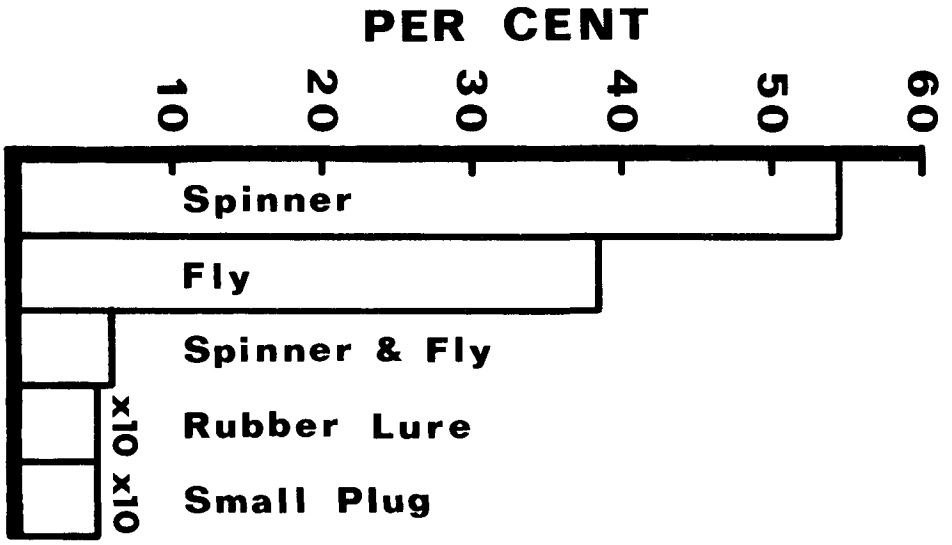


FIGURE 6. Various types of artificial lures used by anglers on the "catch-and-release" fishery on Noontootla Creek from 1964 to 1969.

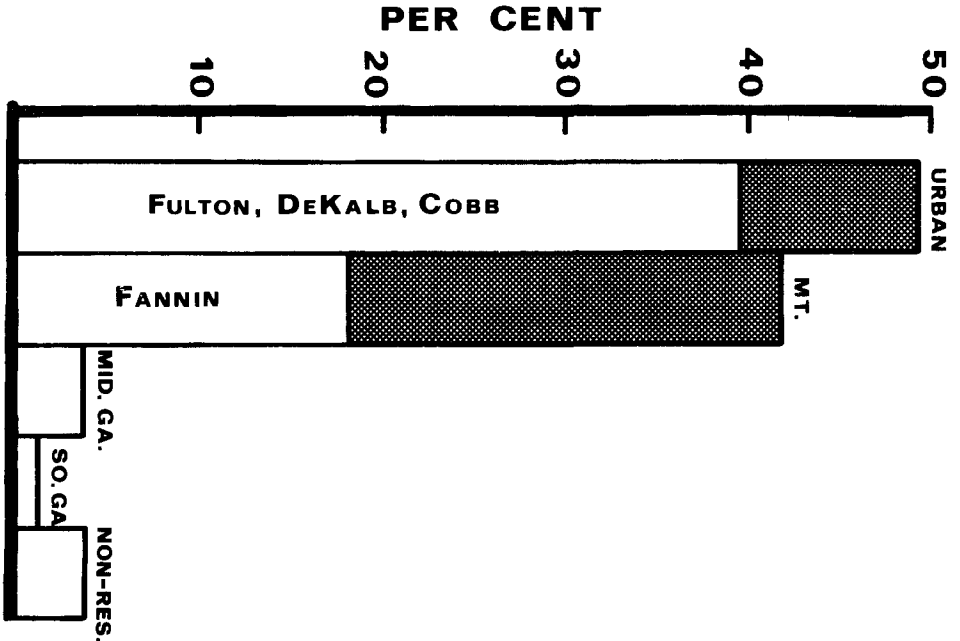


FIGURE 7. County residence of anglers utilizing the "catch-and-release" fishery on Noontootla Creek from 1964 to 1969.