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FEDERAL AID TO FISH AND WILDLIFE RESTORATION

Job Performance Report

Project F-66-R-2



RIVER AND STREAM INVESTIGATIONS

Job V. South Fork Boise River Fisheries Investigations

Period Covered: 1 March 1976 to 28 February 1977

by

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JOB PERFORMANCE REPORT

State of Idaho Name: RIVER AND STREAM INVESTIGATIONS
Project No. F-66-R-2 Title: South Fork Boise River Fisheries
Job No. V Investigations
Period Covered: 1 March 1976 to 28 February 1977

ABSTRACT

Anglers fished an estimated 14,958 hours to catch an estimated 17,514 fish from the South Fork of the Boise River between 29 May and 30 November 1976. The catch was composed of 1,325 wild rainbow trout, 226 hatchery rainbow trout, 9,525 rainbow trout caught and released, 6,214 mountain whitefish, 112 Dolly Varden trout and 112 other fish. Caught-and-released rainbow trout made up 85% of the estimated rainbow catch and caught-and-released mountain whitefish 79% of the total estimated whitefish catch. Two species, mountain whitefish and rainbow trout, comprised 99% of the total catch.

The river section from Anderson Ranch Dam to Indian Rock accounted for 56% of the angling effort and 53% of the estimated total catch while the section from Indian Rock to Danskin Bridge sustained 46% of the effort and yielded 47% of the estimated catch.

Rainbow trout were caught at an average catch rate of 0.74 fish per hour while mountain whitefish were caught at a rate of 0.41 fish per hour during the census period.

The mean length of harvested wild rainbow trout was 343 mm (13.5 in) and mountain whitefish was 337 mm (13.2 in).

Back calculation of wild rainbow trout lengths from a linear regression analysis of scale samples showed wild trout length at 124 mm (4.9 in) at annulus one, 201 mm (7.9 in) at annulus two, 267 mm (10.5 in) at annulus three, 333 mm (13.1 in) at annulus four and 380 mm (14.9 in) at annulus five. The sampled rainbow reached minimum legal harvestable length (305 mm or 12 in) during the fourth year of life.

License checks during creel census interviews indicated that local anglers comprise the bulk of South Fork anglers with 86% of the anglers having resident combination (Class 01) or resident fishing (Class 03) licenses and with 84% claiming residence in either Boise or Mountain Home. Anglers interviewed expressed support (82% in favor) for "management for a self-sustaining wild rainbow trout fishery with restrictive special fishing regulations."

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INTRODUCTION

The South Fork of the Boise River from Anderson Ranch Dam to Arrowrock Reservoir (Fig. 1) has a long history of excellent wild rainbow trout angling. Beach (1975) reported that 32% of the wild rainbow caught in 1974 were over 305 mm (12 in) total length. Until 1976, hatchery catchable rainbow trout releases of about 15,000 fish per year supplemented the wild trout population.

In 1976 the South Fork was designated as a special trout regulation area and hatchery releases were terminated. Special trout regulations were initiated in order to provide a quality wild rainbow trout fishery based on limited harvest and natural reproduction. The special trout regulations consist of a three-trout bag and possession limit, 305 mm (12 in) minimum length for trout reduced to possession, fishing gear restricted to artificial flies and lures only and a closure to angling from motorized boats.

This study was initiated to record angler acceptance of the special regulations and angler participation in the fishery. Documentation of the response of the wild rainbow population to the new regulations and to termination of hatchery introductions is another goal of this study.

All references to data collected in 1974 are from Beach (1975).

OBJECTIVES

To monitor angler acceptance of the new special regulations and angler participation in the fishery.

To determine the effects on the wild rainbow trout population of elimination of hatchery catchable introductions and of the special trout regulations.

RECOMMENDATIONS

Formulate specific management goals for the South Fork.

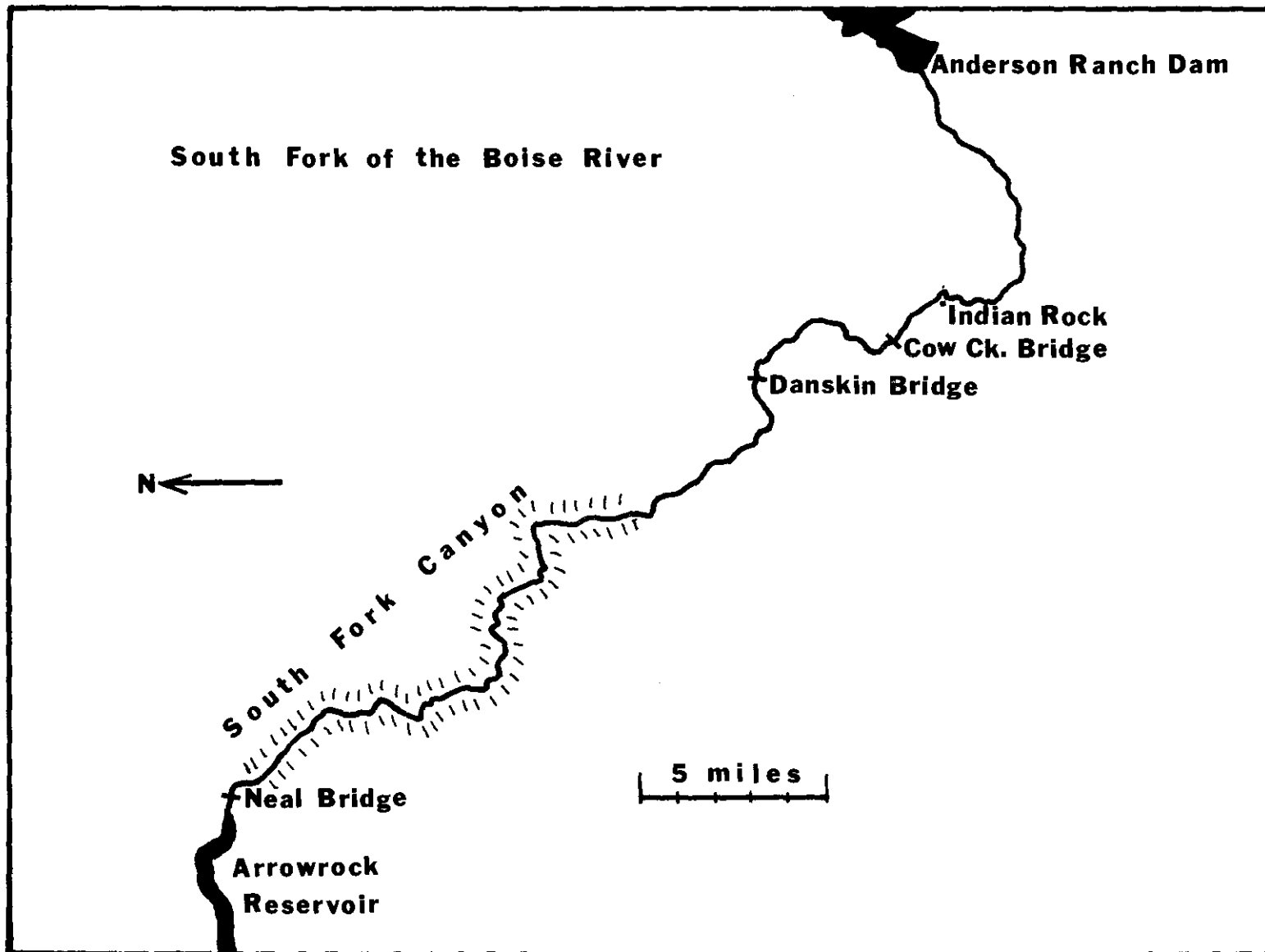
Attempt to improve the Dolly Varden fishery either by restrictive regulations or hatchery introductions.

Monitor catch of wild rainbow during the winter whitefish season.

TECHNIQUES USED

Creel Census

Using the creel census procedure outlined by Reid (1973) we divided the census period (29 May-30 November) into 4-week intervals. We randomly chose 50% of the weekend days and 20% of the weekdays in each interval for angler counts. A count was made in each of four equal time periods dividing the count day, with the first count randomly chosen within the first period and



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Figure 1. The South Fork of the Boise River from Anderson Ranch Dam to Arrowrock Reservoir.

the remaining counts equally spaced in each of the three remaining time periods. We completed all counts in less than 1 hour by observing anglers from a vehicle along the 9.6-km (6-mi) river sections from Anderson Ranch Dam to Indian Rock and from Indian Rock to Danskin Bridge.

Angler hours were estimated separately for weekdays, weekend days and holidays and then totaled for total angler use. The following calculations were used to estimate angler hours for each of the three classes of census days:

$$\frac{\text{Total anglers counted}}{\text{Number of counts}} = \text{Average anglers per count}$$

$$\text{Average anglers per count} \times \text{days in interval} \times \text{daylight hours} = \text{total angler hours}$$

Both on count days and on separate interview days we contacted anglers at the river to determine catch rates, catch composition, length of harvested fish and angler opinions. Catch rates derived from angler interviews were applied to total angler hours to estimate total catch for each fish species taken.

We solicited angler opinions concerning acceptance of the special trout regulations and options for future restrictions should further restriction be necessary to attain management goals.

From license checks, angler residence and license classes were recorded for each angler interviewed. We also recorded the type of gear used by each angler and the method of fishing used.

Test Angling

Because of the length restriction on harvested trout, angler interviews did not provide a complete length frequency of rainbow trout. Test angling was conducted to establish rainbow trout length data comparable to similar data collected by Beach in 1974. All fish caught during test angling were measured, tagged with monel jaw tags and returned to the river. Subsequent tag returns should verify fish scale age and growth work and establish seasonal movement of rainbow trout.

Age and Growth

We collected scales from wild rainbow harvested by anglers and caught during test angling to establish growth rates of wild rainbow. A linear regression was computed from 20 wild rainbow trout scale samples viewed at a magnification of 73X. Using the computed length-scale radius relationship, total length at each annulus was back calculated.

FINDINGS

Angler Use

From 29 May to 30 November anglers fished an estimated 14,958 hours at

the South Fork of the Boise River from Anderson Ranch Dam to Danskin Bridge (Table 1). Angling use was relatively constant from the opening of the general trout season in May until mid-September when use dropped sharply and remained at low levels until the season ended in November. Total angling use in 1976 was about half the 26,443 hours estimated in 1974 under non-restrictive trout regulations and with hatchery catchable introductions. Angling effort also showed a much stronger summer peak in 1974.

The river section from Anderson Ranch Dam to Indian Rock accounted for 8,369 hours of angling or 56% of the use in 1976 (Table 2) compared to 60% of the angling in 1974. The section from Indian Rock to Danskin Bridge provided 6,589 hours or 46% of the 1976 angling (Table 3) compared to 40% in 1974.

Fish Harvest

During the 1976 census period, anglers caught an estimated 17,514 fish from the South Fork (Table 1). Of the total catch, 14,607 (83%) were released back into the river by anglers. In 1974, with less restrictive regulations and with hatchery catchable introductions, anglers caught 22,056 fish of which 1,730 (8%) were released back into the river. Estimated actual harvest in 1976 was 2,907 fish compared to 20,326 fish in 1974.

In 1976 the river section from Anderson Ranch Dam to Indian Rock accounted for 53% of the estimated total catch or 9,168 fish (Table 2) compared to 13,891 fish or 63% of the estimated 1974 total catch. During 1976, the river section from Indian Rock to Danskin Bridge accounted for 47% of the estimated total catch or 8,122 fish (Table 3) while 1974 estimates for the same section are 37% of the estimated total catch or 8,165 fish. Catch data for 1976 shows greater uniformity of catch between the two river sections than 1974 data.

Of the two fish species caught most often at the South Fork, anglers released 86% of the rainbow trout caught and 79% of the mountain whitefish caught in 1976 (Table 4). In 1974 anglers released 8% of the rainbow trout taken and no mountain whitefish were reported released.

The estimated wild rainbow trout harvest in 1976 was 1,325 fish compared to 5,710 wild rainbow taken in 1974. Based on a 1974 length frequency of wild rainbow, 32% of the wild rainbow taken by hook and line were over 305 mm (12 in) total length. Applying the 32% to the total wild rainbow harvest in 1974 yields 1,827 wild rainbow over 305 mm (12 in) harvested in 1974 compared to 1,325 harvested in 1976. A reduction in harvest of about 500 wild rainbow over 305 mm (12 in) occurred between 1974 and 1976 when more restrictive trout regulations were instituted. Additionally, a total of 3,883 wild rainbow under 305 mm (12 in) were harvested in 1974 compared to no fish under 305 mm (12 in) harvested in 1976.

Anglers harvested an estimated 226 rainbow trout of hatchery origin in 1976 compared to 11,832 hatchery rainbow harvested in 1974.

Dolly Varden catch in 1976 was 112 fish of which 48% were reported released by anglers. In 1974, 51 Dolly Varden trout were estimated as harvested with none reported caught and released.

Table 1. Total estimated angling hours and catch at the South Fork of the Boise River from Anderson Ranch Dam to Danskin Bridge in 4-week creel census intervals, 29 May - 30 November 1976.

Census interval starting date	Total estimated angling hours	Number of anglers interviewed	Estimated fish creel							Estimated fish caught and released						Total fish harvested and released
			Wrb	Hrb	WF	DV	Kok	Smb	Total	Rb	Wf	DV	Kok	Smb	Total	
29 May	3,241	190	350	74	255	38	8	0	725	1,900	456	19	8	0	2,383	3,108
26 June	2,298	221	185	42	59	0	0	4	290	1,407	493	23	40	0	1,963	2,253
24 July	2,364	197	296	10	19	0	0	0	325	1,508	561	12	0	0	2,081	2,406
21 August	3,139	153	206	34	140	7	0	0	387	1,564	1,402	0	0	0	2,966	3,353
18 Sept.	2,666	90	175	66	447	13	0	0	701	2,075	1,378	0	52	0	3,505	4,206
16 Oct.	910	50	84	0	135	0	0	0	219	855	638	0	0	0	1,493	1,712
13 Nov.	340	39	29	0	231	0	0	0	260	216	0	0	0	0	216	476
Total	14,958	940	1,325	226	1,286	58	8	4	2,907	9,525	4,928	54	100	0	14,607	17,514
Fish per hour			0.09	0.01	0.09	<.01	<.01	<.01	0.19	0.64	0.33	<.01	<.01	-	0.98	1.17
Percent of catch			7.6	1.3	7.3	0.3	<0.1	<0.1	16.6	54.4	28.1	0.3	0.6	-	83.4	

Wrb - wild rainbow trout
Hrb - hatchery rainbow trout
Wf - mountain whitefish
Kok - kokanee
Smb - smallmouth bass
DV - Dolly Varden

Released Rb, Wf, etc. - Fish reported by anglers as caught and released

Table 2. Total estimated rainbow trout and mountain whitefish catch at the South Fork of the Boise River from Anderson Ranch Dam to Indian Rock in 4-week creel census intervals, 29 May - 30 November 1976.

Census interval starting date	Total estimated angling hours	Estimated catch							
		Anderson Ranch Dam to Indian Rock						Total Wf	Total catch
		Wrb	Hrb	Released Rb	Total Rb	Released Wf	Total Wf		
29 May	2,112	140	66	1,077	1,283	93	222	315	1,598
26 June	1,348	108	14	742	864	40	256	296	1,160
24 July	1,208	122	0	574	696	9	286	295	991
21 August	1,696	119	34	611	764	68	882	950	1,714
18 Sept.	1,301	52	52	806	910	351	1,132	1,483	2,393
16 Oct.	498	30	0	538	568	40	424	464	1,032
13 Nov.	206	25	0	115	140	140	0	140	280
Total	8,369	596	166	4,463	5,225	741	3,202	3,943	9,168
Fish per hour		0.07	0.02	0.53	0.62	0.09	0.38	0.47	1.09

Table 3. Total estimated rainbow trout and mountain whitefish catch at the South Fork of the Boise River from Indian Rock to Danskin Bridge in 4-week creel census intervals, 29 May - 30 November 1976.

Census interval starting date	Total estimated angling hours	Estimated catch							
		Indian Rock to Danskin Bridge						Total Wf	Total catch
		Wrb	Hrb	Released Rb	Total Rb	Wf	Released Wf		
29 May	1,129	210	8	823	1,041	162	234	396	1,437
26 June	950	77	28	665	770	19	237	256	1,026
24 July	1,156	174	10	934	1,118	10	275	285	1,403
21 August	1,443	87	0	953	1,040	72	520	592	1,632
18 Sept.	1,365	123	14	1,269	1,406	96	246	342	1,748
16 October	412	54	0	317	371	95	214	309	680
13 November	134	4	0	101	105	91	0	91	196
Total	6,589	729	60	5,062	5,851	545	1,726	2,271	8,122
Fish per hour		0.11	0.01	0.77	0.89	0.08	0.26	0.34	1.23

Table 4. Total estimated rainbow trout and mountain whitefish catch at the South Fork of the Boise River from Anderson Ranch Dam to Danskin Bridge in 4-week creel census intervals, 29 May - 30 November 1976.

Census interval starting date	Total estimated angling hours	Estimated catch						
		Anderson Ranch Dam to Danskin Bridge						
		Wrb	Hrb	Released Rb	Total Rb	Released Wf	Total Wf	
29 May	3,241	350	74	1,900	2,324	255	456	711
26 June	2,298	185	42	1,407	1,634	59	493	552
24 July	2,364	296	10	1,508	1,814	19	561	580
21 August	3,139	206	34	1,564	1,804	140	1,402	1,542
18 Sept.	2,666	175	66	2,075	2,316	447	1,378	1,825
16 October	910	84	0	855	939	135	638	773
13 November	340	29	0	216	245	231	0	231
Total	14,958	1,325	226	9,525	11,076	1,286	4,928	6,214
Fish per hour		0.09	0.01	0.64	0.74	0.09	0.33	0.41
Percent of catch					63.2			35.5

Incidental catches of kokanee and smallmouth bass were again documented in 1976 (Table 1), but no squawfish were checked in 1976 from the South Fork.

Species Composition

Although anglers caught six fish species from the South Fork in 1976, two species (rainbow trout and mountain whitefish) made up 99% of the total catch (Table 1). Incidental catch of Dolly Varden, kokanee salmon and smallmouth bass made up 1.3% of the estimated total catch.

Rainbow trout of hatchery origin made up 1.3% of the estimated total catch in 1976 compared to 54% of the estimated total catch in 1974. The majority of the hatchery rainbow caught in 1976 were taken in the river section from Anderson Ranch Dam to Indian Rock (Tables 3, 4, and 5).

Mountain whitefish comprised 35% of the estimated total catch during the trout season in 1976 compared to 8% of the estimated total catch in 1974. However, this does not represent an increase in whitefish harvest in 1976 but rather is a function of less rainbow harvested in 1976. More whitefish were caught in 1974 (1,727) during the trout season than were in 1976 (1,286). Whitefish comprised 22% of the catch from Anderson Ranch Dam to Indian Rock and 14% from Indian Rock to Danskin Bridge in 1976 (Table 5) with the 1974 data showing a similar variability between the two census sections.

Harvested wild rainbow trout comprised 8% of the estimated total catch in 1976 and a large portion of the released rainbow (54% of the 1976 catch) were likely also wild rainbow. In 1974 harvested wild rainbow comprised 26% of the estimated total catch as well as a portion of the released rainbow (8% of the 1974 catch).

Caught and released rainbow trout consistently made up at least 18% of the total estimated catch in each of the two census sections through all seven creel census intervals in 1976 (Table 5).

Catch Rates

Rainbow trout were caught at an average catch rate of 0.74 fish per hour from 29 May to 30 November 1976 at the South Fork (Table 6). The average catch rate for mountain whitefish over the same time period was 0.41 fish per hour. In 1974 the average catch rates for a similar time period were 0.73 fish per hour (rainbow trout) and 0.06 fish per hour (mountain whitefish).

Using estimates of numbers of wild rainbow over 305 mm (12 in) harvested in 1974 (1,827 fish) and 1976 (1,325 fish), catch rates for harvested wild rainbow over 305 mm (12 in) are calculated as 0.07 fish per hour (1974) and 0.09 fish per hour (1976).

Length Frequency

Wild rainbow trout checked in anglers' creels in 1976 averaged 343 mm (13.5 in) total length (Fig. 2). Mean total length did not vary significantly

Table 5. Catch composition of rainbow trout and mountain whitefish in two creel census sections at the South Fork of the Boise River in 4-week intervals, 29 May - 30 November 1976.

Census interval starting date	Catch composition (percent of catch)											
	Anderson to Indian Rock					Indian Rock to Danskin					Anderson to Danskin	
	Wrb	Hrb	Released Rb	Wf	Released Wf	Wrb	Hrb	Released Rb	Wf	Released Wf	Total Rb	Total Wf
29 May	4.6	2.5	35.5	3.1	7.3	6.9	0.3	27.1	5.3	7.7	76.6	23.4
26 June	4.9	0.6	33.9	1.8	11.7	3.5	1.3	30.4	0.8	10.8	74.7	25.2
24 July	5.1	0	23.9	0.4	11.9	7.3	0.4	39.0	0.4	11.5	75.7	24.2
21 August	3.6	1.0	18.3	2.0	26.3	2.6	0	28.5	2.1	15.5	53.9	46.1
18 September	1.3	1.3	19.5	8.5	27.3	3.0	0.3	30.6	2.3	5.9	55.9	44.1
16 October	1.7	0	31.4	2.3	24.8	3.1	0	18.5	5.5	12.5	54.8	45.1
13 November	5.2	0	24.2	29.4	0	0.8	0	21.2	19.1	0	51.5	48.5
Mean percent for all intervals	3.8	0.8	26.7	6.8	15.6	3.9	0.3	27.9	5.1	9.1	63.6	36.7

Table 6. Estimated catch rates (fish per hour) in two creel census sections of the South Fork of the Boise River in 4-week intervals, 29 May - 30 November 1976.

Census interval starting date	Catch rates (Fish per hour)									
	Anderson to Indian Rock				Indian Rock to Danskin				Anderson to Danskin	
	Wrb	Released Rb	Wf	Released Wf	Wrb	Released Rb	Wf	Released Wf	Rb	Wf
29 May	0.07	0.51	0.04	0.10	0.19	0.73	0.14	0.21	0.72	0.22
26 June	0.08	0.55	0.03	0.19	0.08	0.70	0.02	0.25	0.71	0.23
24 July	0.10	0.47	0.01	0.24	0.15	0.81	0.01	0.24	0.77	0.24
21 Aug.	0.07	0.36	0.04	0.52	0.06	0.66	0.05	0.36	0.57	0.49
18 Sept.	0.04	0.62	0.27	0.87	0.09	0.93	0.07	0.18	0.87	0.68
16 Oct.	0.06	1.08	0.08	0.85	0.13	0.77	0.23	0.52	1.03	0.85
13 Nov.	0.12	0.56	0.68	-	0.03	0.75	0.68	-	0.72	0.68
Catch rate entire period (Fish per hour)	0.07	0.53	0.09	0.38	0.11	0.77	0.08	0.26	0.74	0.41

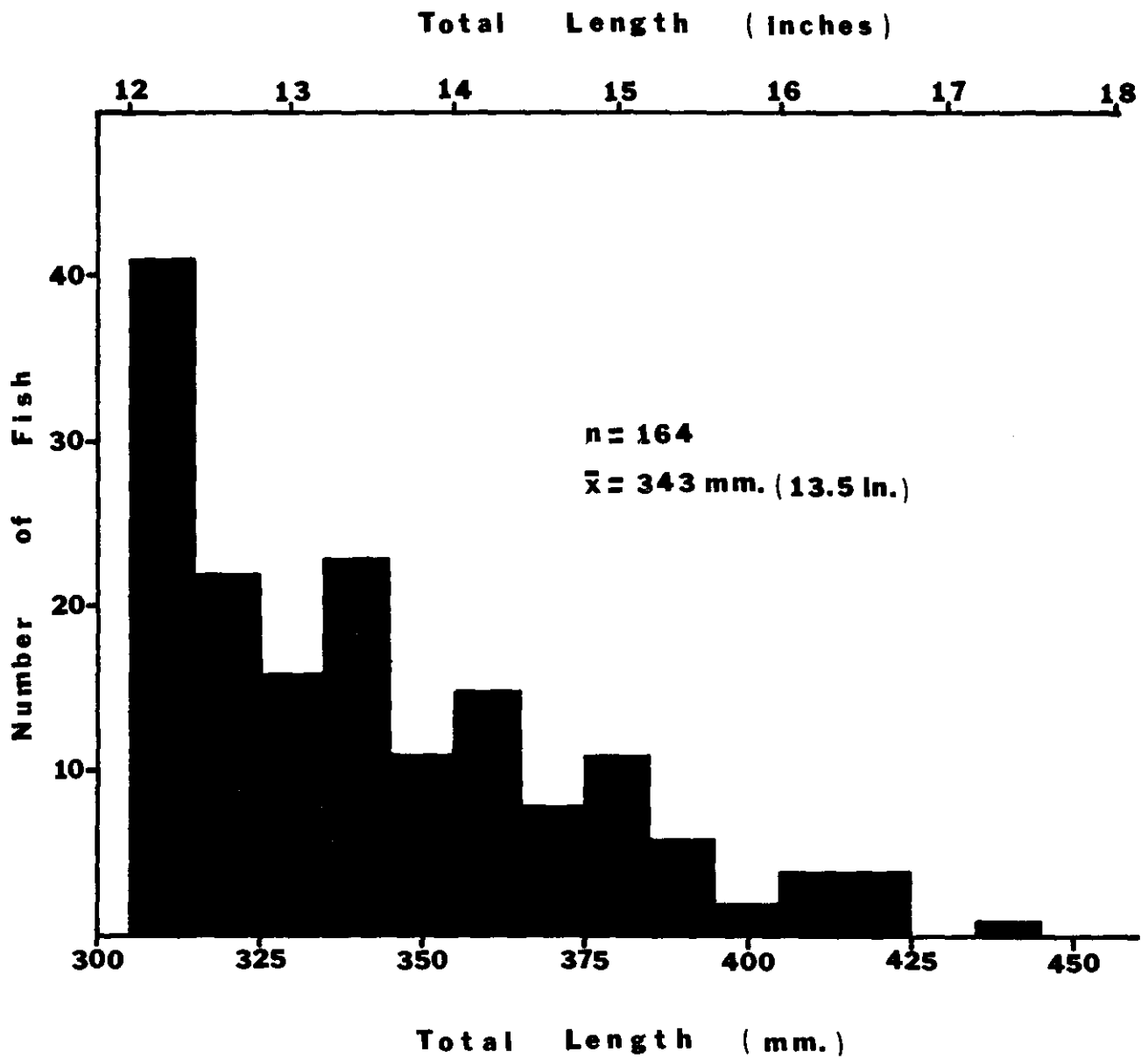


Figure 2. Total length of wild rainbow trout sampled in angler harvest during creel census interviews at the South Fork of the Boise River, 1976.

between the two census sections or between the seven census intervals conducted in 1976. Wild rainbow length data collected in 1974 also showed little variability between seven creel census intervals. A comparison of length data for wild rainbow trout over 305 mm (12 in) taken by anglers and test angling in 1974 and 1976 (Fig. 3) shows little difference in mean length between the 2 years. Further comparison of the entire range of fish length data collected by creel census and test angling in 1974 and by test angling alone in 1976 (Fig. 4) shows a more strongly peaked distribution of 305 mm (12 in) for the 1976 sample than is evident in the 1974 sample. The 1976 data also has a mean total length of 20 mm (0.8 in) greater than the 1974 sample.

Samples of mountain whitefish from anglers' creels in 1974 and 1976 (Fig. 5) are very similar with mean lengths in both cases near 343 mm (13.5 in) in spite of the 1974 sample being taken during the winter season and the 1976 sample during the general trout season.

Rainbow Trout Growth

A linear regression of total length (mm) and anterior scale radius (mm at 73X) was plotted for scale data on 20 wild rainbow trout (Fig. 6). The coefficient of determination (r^2) value for this relationship is 0.850. This relationship is represented by the formula:

$$\text{Total length} = 59 + 2.7 (\text{anterior scale radius})$$

I used this formula to back calculate total lengths for the different age classes of fish at each year of life (time of annulus formation) and mean increments of growth (Table 7). The rainbow sampled attained minimum legal harvestable length (305 mm or 12 in) during the fourth year of life. Back calculated total lengths of 124 mm (4.9 in) at the time of first annulus formation, 201 mm (7.9 in) at the second annulus, 267 mm (10.5 in) at the third annulus, 333 mm (13.1 in) at the fourth annulus and 380 mm (14.9 in) at the fifth annulus were determined for the wild rainbow sampled.

Angler Composition and Opinions

Creel census interviews of anglers at the South Fork of the Boise River indicate a majority of anglers used fly rod (64%) and flies (69%) over spinning rods (33%) and lures (31%) (Table 8). Fly fishing was most popular during fall months with lower water flows while lure fishing peaked early in the season with high river flows.

Most anglers (62%) waded the river while fishing with the remainder either bank fishing (35%) or boat fishing (3%). A considerable amount of boating not related to fishing does occur on the South Fork, but documentation was outside the scope of this project.

Only 4% of the anglers interviewed reported using barbless hooks. By November 1976 many of the wild rainbow examined during test angling had missing maxillary bones or mouth deformity indicating catch and release.

Fishing license checks during creel census interviews indicated that local

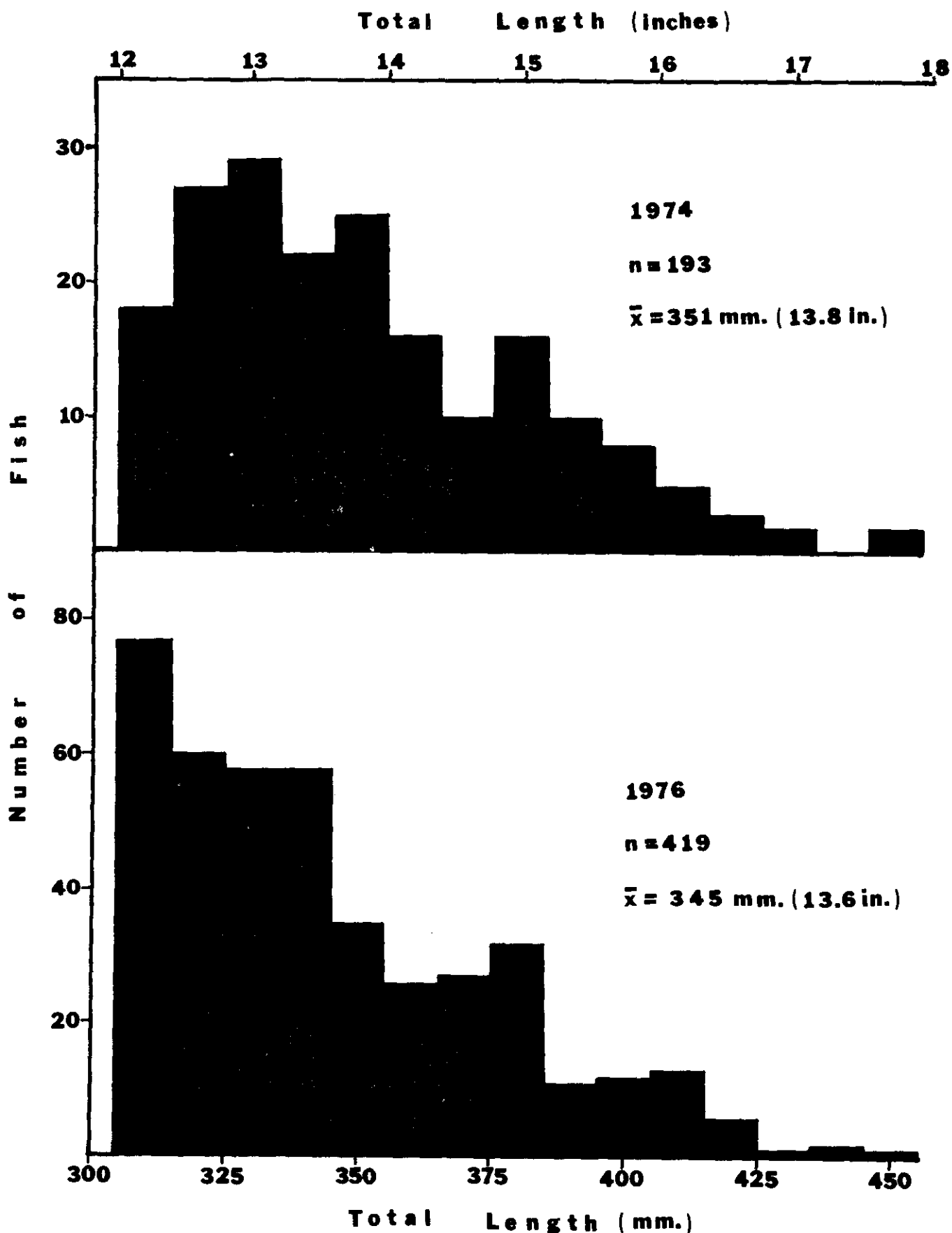


Figure 3. Total length of wild rainbow trout over 305 mm (12 in) sampled in anglers harvest and during test angling at the South Fork of the Boise River, 1974 (Beach 1975) and 1976.

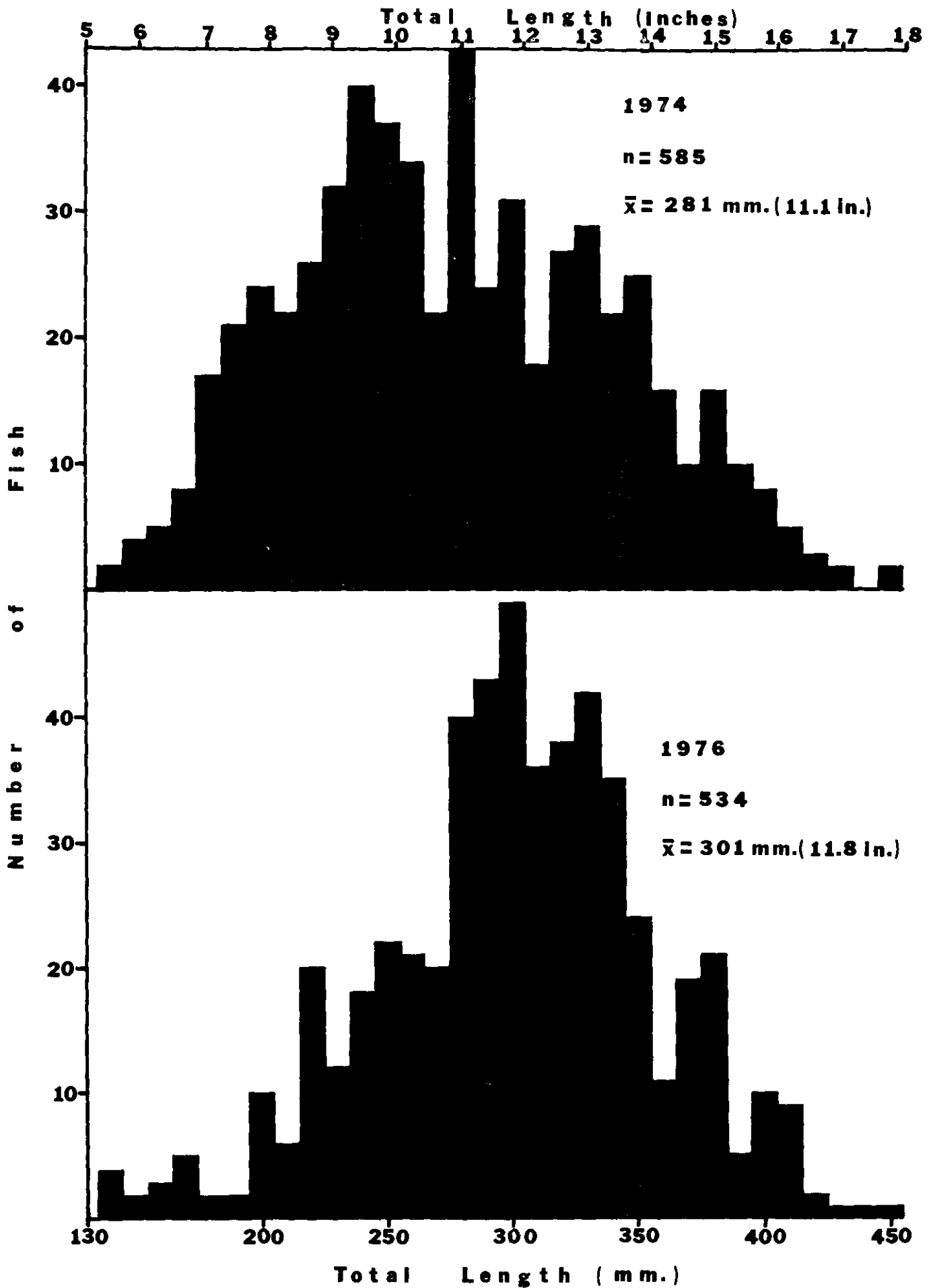


Figure 4. Total length of wild rainbow trout sampled in angler harvest and during test angling at the South Fork of the Boise River, 1974 (Beach 1975) and 1976.

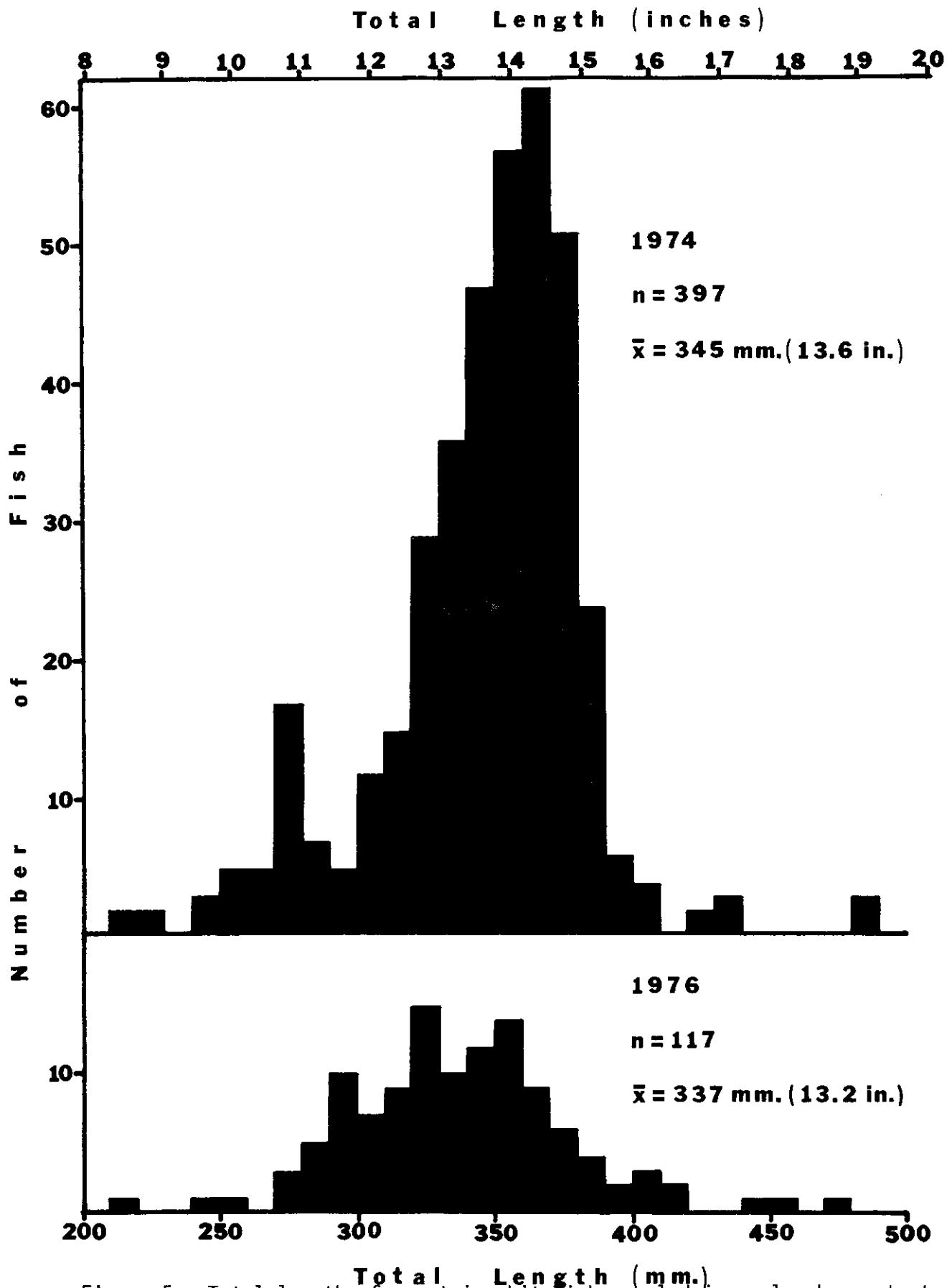


Figure 5. Total length of mountain whitefish sampled in angler harvest at the South Fork of the Boise River, 1974 (Beach 1975) and 1976.

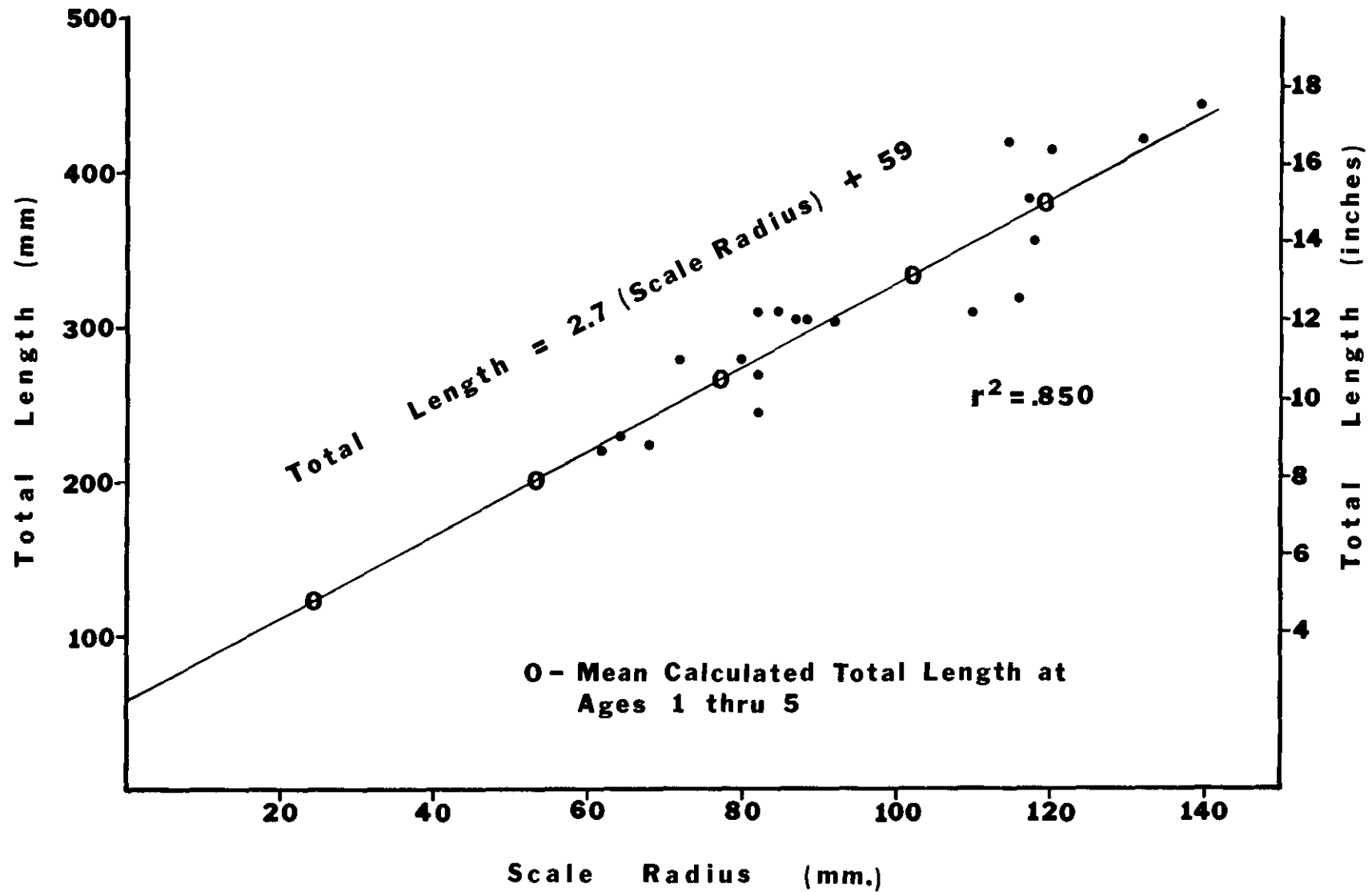


Figure 6. Relationship of total length to maximum anterior scale radius for wild rainbow trout at the South Fork of the Boise River, 1976.

Table 7. Mean calculated total lengths and increments of growth for 20 wild rainbow trout collected at the South Fork of the Boise River, 1976.

Age group	Number in sample	Mean calculated total length (mm) at annulus				
		1	2	3	4	5
0	0					
I	0					
II	3	127	206			
III	9	123	199	262		
IV	4	124	202	284	338	
V	4	126	203	262	328	380
Mean (weighted)		124	201	267	333	380
Increment of growth		124	77	66	66	47

Table 8. Methods and gear types used by anglers interviewed during creel census at the South Fork of the Boise River from 29 May to 30 November, 1976.

<u>Fishing method</u>	(n=840)
Bank	35%
Wade	62%
Boat	3%
Rod type	(n=866)
Fly rod	64%
Spinning rod	33%
Other	4%
Lure type	(n=818)
Artificial fly	69%
Artificial lure	31%
Hook type	(n=833)
Barbed hook	96%
Barbless hook	4%

Idaho residents are the primary angling users of the South Fork of the Boise River. Resident combination and fishing licenses comprised 86% of the licenses checked (Table 9). Nonresident license classes comprised 6.8% of the licenses checked. Most of the anglers interviewed reside in Boise (55%) and Mountain Home (29%) with 10.5% from other Idaho communities and 5.5% nonresidents.

Anglers interviewed at the South Fork voiced support for the new trout regulations. Of those anglers voicing opinions, 82% supported the restrictive regulations and their management goals while 18% were opposed (Table 10). We also quizzed anglers regarding possible regulation changes if necessary to meet present management goals (Table 10). A single hook requirement was a more popular option to those voicing an opinion (62% in favor) than either a barbless hook requirement (53% in favor) or a fly-fishing only restriction (43% in favor).

No angler composition or angler opinion data is available from 1974 when less restrictive trout regulations were in effect, however, we should assume that a new segment of the angling public used the South Fork during 1976. Angler opinions solicited in 1976 are from a group selected by the restrictive trout regulations who should express support for those same regulations.

DISCUSSION

Special Regulations

Because the special trout regulations for the South Fork of the Boise River went into effect at the same time hatchery catchable rainbow introductions were terminated, it is difficult to show cause/effect relationships for changes in angler use or fish population structure. Obviously, the cumulative effect of the change in these two management procedures can be determined but the impact of each cannot be separated. Angling use in 1976 declined 56% over 1974 estimates. Similar initial reductions occurred when other Idaho streams were switched to more restrictive regulations. However, angling use continued to rise in subsequent years as the program took affect. Catch composition switched from primarily a hatchery catchable rainbow and wild rainbow harvest situation in 1974 to primarily a wild rainbow and mountain whitefish catch and release situation in 1976. The overall catch rate in 1976 was 1.17 fish per hour, up from 0.83 fish per hour in 1974. Unquestionably, a new angling public used the South Fork in 1976 and experienced good fishing based on reuse of fish caught and released. The comparatively high catch rates of wild rainbow trout in 1976 (at least 0.52 fish per hour) indicate that changes in the wild rainbow population are also taking place. Wild rainbow were caught at a rate of at least 0.28 fish per hour in 1974. Length data collected in 1976 shows an increased mean total length of 20 mm (0.8 in) over 1974 samples. A larger portion of the wild rainbow length sample (52%) were over 305 mm (12 in) in 1976 than in 1974 (32%).

Regardless of the causes, the wild rainbow population in particular has shown a response in terms of more larger fish in the population and higher catch rates. The question now is can wild rainbow fishing continue to improve in the face of inevitable increase in angler use during future years.

Table 9. License classes recorded during creel census interviews at the South Fork of the Boise River from 29 May to 30 November 1976.

License class title	Class number code	Number checked	Percent of total	License fee
Resident combination	01	464	51.0	\$10.00
Resident fishing	03	319	35.1	\$ 6.00
Senior resident (Age 65-70)	04	10	1.1	\$ 1.00
Senior resident (Age 70+)	92	6	0.6	0
Junior resident combination	07	15	1.6	\$ 6.00
Junior resident fishing	09	32	3.5	\$ 4.00
Serviceman or furlough	93	1	0.1	0
Nonresident season fishing	22	56	6.2	\$20.00
Nonresident fishing 7-day	23	5	0.5	\$ 7.00
Nonresident fishing 1-day	24	1	0.1	\$ 3.00
Total		909		

Table 10. Angler opinions recorded during creel census interviews at the South Fork of the Boise River from 29 May to 30 November 1976.

ANGLER OPINIONS

Management for self-sustaining quality wild rainbow trout fishery with restrictive special regulations. (n= 276)	In favor of	215	(78%)
	Opposed	47	(17%)
	No opinion	14	(5%)
Three trout limit. (n= 258)	In favor of	189	(73%)
	Opposed	58	(22%)
	No opinion	11	(4%)
Twelve-inch minimum trout length. (n= 253)	In favor of	190	(75%)
	Opposed	53	(21%)
	No opinion	10	(4%)
Closure to fishing from motorized boats (n= 246)	In favor of	197	(80%)
	Opposed	9	(4%)
	No opinion	40	(16%)
Possible options if further restrictions are necessary to meet management goals.			
Barbless hooks required. (n= 244)	In favor of	113	(46%)
	Opposed	101	(41%)
	No opinion	30	(12%)
Single hooks required. (n= 234)	In favor of	143	(61%)
	Opposed	90	(38%)
	No opinion	1	(1%)
Fly fishing only. (n= 268)	In favor of	112	(42%)
	Opposed	147	(55%)
	No opinion	9	(3%)

Management Goals

Assurance of continued improvement in wild rainbow angling is contingent on adjustment of the special regulations in the future to allow for changes in angler use. South Fork anglers generally consider rainbow 457 mm (18 in) or larger as trophy size fish and consider taking these larger fish a desirable though uncommonly attained goal when fishing the South Fork. Ultimately the nature of the wild rainbow population, particularly the number of fish over 457 mm (18 in), will partly determine the extent of angler use. Specific management goals are needed to formulate regulations which will preserve the desired population structure.

The present management situation has the advantage of being directly comparable with 1974 when less restrictive trout regulations were in effect. Improvement of the wild rainbow fishery through special trout regulations is based on increased recruitment of fish under 305 mm (12 in), which are protected by regulation, into size classes over 305 mm (12 in). Estimated harvest of wild rainbow over 305 mm (12 in) decreased by 500 fish between 1974 and 1976. Probably increases in angling effort will eventually offset this harvest differential and begin to cut into recruitment from protected size classes. Regulation changes in the future may be necessary to maintain adequate numbers of larger fish for both spawning and harvest.

Definite management goals as to the percentage of the fish population desired over 457 mm (18 in), catch rates desired and harvest numbers desired are necessary before regulation options can be formulated. These goals will partly determine the extent of angling use increase that occurs at the South Fork. The complete range of options from maximum harvest of small fish through no kill of large fish is available by the degree of restriction from liberal gear and harvest through purely recreational, no-kill regulations. Specific management goals are needed.

Fortunately a more restrictive fishery for wild rainbow trout would not preclude harvest of other fish species, particularly mountain whitefish, from the South Fork. Anglers caught an estimated 6,214 whitefish (4,928 were released) during the general trout season in 1976 and caught 3,063 whitefish (all harvested) during the 1974 winter season. The mean total length of whitefish caught both years was over 330 mm (13 in). Mountain whitefish are generally thought of as under exploited at the South Fork and harvest is encouraged. Although the less restrictive winter season regulations are often thought of by trout anglers as in conflict with optimizing the wild rainbow fishery, they do allow increased harvest of the under utilized whitefish resources. Future monitoring of incidental trout catch during the winter season (less restrictive gear) is needed to determine if mortality of caught and released rainbow is significant. Presently the winter whitefish regulations provide the best means for increased harvest of whitefish, but public education in the future might allow increased whitefish harvest under the same regulations applied to the general trout season. The advantages of this option might be reduced mortality of caught and released trout and a year-round fishing season.

Another species native to the South Fork and having potential to provide additional angling is the Dolly Varden. In 1976 we estimated 112 Dolly Varden caught and in 1974 our estimate was 51 Dolly Varden. The very small numbers

present in the catch both years points to a depressed population of this species at the present time, probably due to poor fall spawning conditions and over-harvest. Anglers report a sharp decline in Dolly Varden fishing in the past 10 years, however, no data is available. This species appeals primarily to the 31% of the South Fork anglers who prefer lure fishing since it is most often caught on lures. Active management of Dolly Varden could provide additional variety as well as occasional very large trophy fish. Introduction of fry or fingerling Dolly Varden should be considered to supplement the present depressed population until catch estimates rise to desired levels.

LITERATURE CITED

Beach, Donald R. 1975. Survey of fish harvest in the South Fork of the Boise River from Anderson Ranch Dam to Arrowrock Reservoir (Job III-e). Idaho Fish and Game Department.

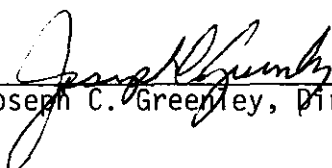
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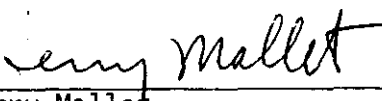
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