

IDAHO DEPARTMENT OF FISH & GAME

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QUARTERLY REPORT
to
U. S. BUREAU OF RECLAMATION



South Fork of Boise River
Creel Census and Fish Population Studies
(08-07-10-S 0062)

Period Covered: 1 July to 30 September 1978

by

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OBJECTIVES

Monitor angler effort and catch in the South Fork Boise River.

Evaluate changes in abundance of game fish species.

Monitor changes in age structure and length frequency of game fish populations.

Provide an aquatic resource base for future Bureau of Reclamation planning studies.

TECHNIQUES USED

Creel Census

We conducted creel census counts and interviews during three census intervals (22 July - 13 October 1978). Census counts were made by car in the roaded river section from Anderson Ranch Dam to Danskin Bridge (Fig. 1).

Our creel census procedure consisted of angler counts conducted on 50% of the weekend days and 20% of the weekdays in each 28-day census interval. Specific count days and time were chosen randomly. The total daylight period for each count day was divided into four equal time periods with an angler count made in each period. The earliest count time was randomly selected within the first count period and counts in subsequent periods were evenly spaced in time. A maximum of 1 hour was allowed to complete each angler count and counts were considered instantaneous in making estimates.

We used recorded angler counts to calculate average angler counts for weekdays and weekend days in each census interval as follows:

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

Multiplication of average anglers per count times days in interval times daylight hours yields an estimate of total angler use. By combining angling hours for weekdays and weekend days we estimate total angling effort in each 28-day census interval.

We interviewed as many anglers as possible on count days and on separate interview days to document average catch rates, catch composition and fish length frequencies. Catch estimates were made by applying average catch rates derived from angler interviews to total use estimates. Residence, fishing license class, type of angling gear and method of angling were also recorded for all angler interviews.

We initially divided the roaded portion of the South Fork into two sections (Anderson Ranch Dam to Indian Rock and Indian Rock to Danskin Bridge) and separately estimated effort and catch for each section to allow comparison with previous creel census estimates for the South Fork. During the 1977 trout season we subdivided the section from Anderson Ranch Dam to Indian Rock at Anderson Bridge. This section covers that portion of the river affected by a proposed reregulation dam.

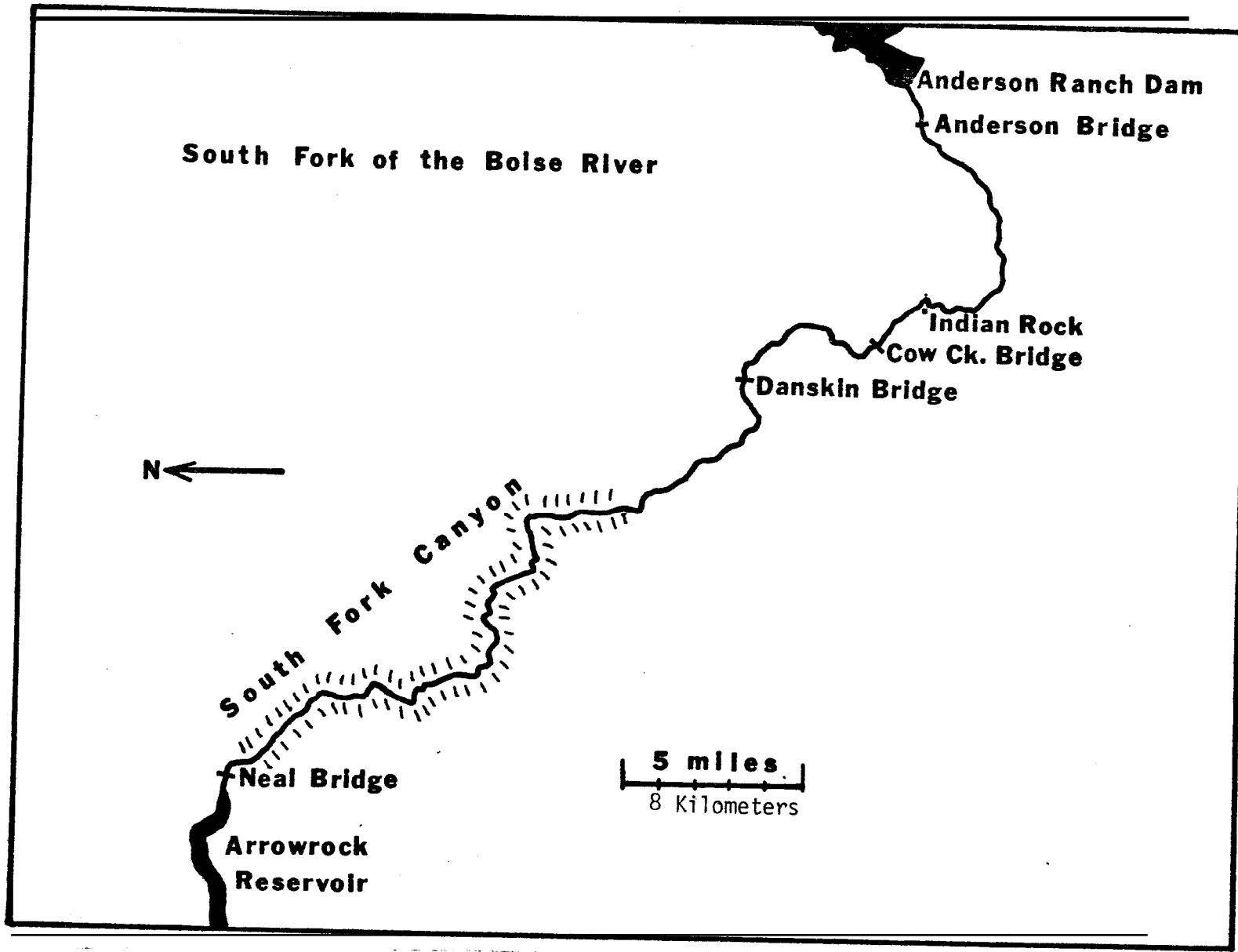


Figure 1. The South Fork of the Boise River from Anderson Ranch Dam to Arrowrock Reservoir.

Snorkel Transects

Snorkel transects were established in each census section during low flows (232 cfs) for rainbow trout enumeration. Two men snorkeled opposite banks and counted all rainbow trout and Dolly Varden which were within their field of vision. Whitefish were not counted although general observations were recorded. Transects were selected which did not have large deep pools because of the difficulty in seeing and counting the fish in deep water with their random movements about the snorkelers.

Transect 1 was from 1.3 road km (0.8 mi) above Anderson Bridge to the bridge, starting at the head of a riffle below a large pool. Transect 2 was from the boat ramp by Reclamation Village to the second bridge abutments 1.9 road km (1.2 mi) downstream. Transect 3 was from 1.6 road km (1.0 mi) above the Cow Creek Bridge to the bridge.

FINDINGS

Creel Census

Angling effort on the South Fork of the Boise River from Anderson Ranch Dam to Danskin Bridge during the period 22 July to 13 October 1978 increased dramatically over the effort during the same period in 1977. In 1977, anglers fished 7,744 hours (Mate 1978) as compared to 12,709 hours in 1978. The 1977 anglers caught and released a total of 8,146 rainbow trout. There was a substantial increase to 20,947 rainbow trout caught and released during the same three creel census interviews in 1978 (Table 1). Angler effort did not change noticeably during the three census intervals during 1978. The rainbow trout catch increased somewhat with the largest increase taking place during the interval beginning 19 August. During the interval beginning 16 September, there was a marked increase in caught and released whitefish. The whitefish are beginning to school at this time preparing for late fall spawning activity and this could account for their increased catch rates.

Rainbow trout became more selective concerning food preference during the period beginning 22 July. Anglers fishing earlier in the summer found that they could catch fish without having to match any specific insect hatch. However, late summer and early fall anglers found that the fish were becoming very specific in relation to food preference. Many anglers would spend several hours fishing before they were able to determine what the rainbow trout were feeding on. Often there would be several different types of insects hatching at one time, but the trout were only using one species of a particular order of insects and they would not feed on any other. The next day the trout might change entirely and reject replicas of insects they were feeding furiously on the day before. This behavior has made fishing difficult for many expert fly fishermen as well as most novice anglers.

Anglers caught a total of 27,536 fish from the South Fork of the Boise River between 22 July and 13 October 1978. Rainbow trout that were caught and released comprised 76.1% of the total catch. Whitefish that were caught and released comprised 18.3% of the total catch. Anglers kept only 5.7% of the fish caught from the South Fork. During the previous interval (24 June to 21 July) catch rates for released rainbow trout surpassed two fish per hour in the lower two sections of the census area (Mate and Cadwallader 1978). Catch

Table 1. Estimated angling effort and catch at the South Fork of the Boise River for three creel census intervals during the period 22 July to 13 October 1978.

Census interval starting date	Angler hours	Rainbow caught and released	Rainbow harvested	Whitetail fish caught and released	Whitetail fish harvested	Dolly Varden caught and released	Dolly Varden harvested	Total Catch
22 July 1978	3,903	5,263	410	521	16	0	0	6,210
19 August 1978	4,150	7,958	303	920	127	48	8	9,364
16 September 1978	<u>4,656</u>	<u>7,726</u>	<u>356</u>	<u>3,590</u>	<u>290</u>	<u>0</u>	<u>0</u>	<u>11,962</u>
⁴ Total	12,709	20,947	1,069	5,031	433	48	8	27,536

rates remained high during the intervals beginning after 22 July in the two lower sections while catch rates increased in Section I (Anderson Dam to Anderson Bridge) to a level of 2.05 fish per hour (19 August-15 September) and 1.88 fish per hour (16 September-13 October). This increase in catch rates was experienced when the flow in the river was decreased from 1500 cfs to 232 cfs and corresponded with the end of the 1978 irrigation season on 4 September. At higher flows, this upper section of the river is difficult to fish from the bank and anglers using rafts tend to use a point of easy access which happens to be down river from Section I. Therefore, angler pressure and catch rates increase immediately after the flow is dropped (Table 2).

Comparison of the data for 1976 and 1978 shows that generally all values have increased substantially since the inception of special regulations (Table 3). Overall hours have increased 56% and overall catch rates have increased from 0.73 fish per hour to 1.73 fish per hour for rainbow trout during the period 22 July-13 October (Mate 1977). The present angler effort is near pre-special regulation effort.

Snorkel Transects

Transect 1 had the highest counts of 187 and 172 for each snorkeler with total of 359 rainbow trout or 276 trout/km (449 trout/mi). Transect 2 had the lowest counts, with 117 and 97 rainbow trout counted and a total of 214 or 113 trout/km (178 trout/mi). Transect 3 exhibited the greatest difference between the two counters 85 and 207 fish for a total of 294 or 184 trout/km (294 trout/mi). The 85 fish were counted on the side of the river nearest the road while the 207 fish were enumerated on the far side. Two Dolly Varden were seen in the deeper runs.

We also noted many dead fish in some of the deeper pools. We assume these were hooking mortalities but they were difficult to recover in deep water without weight belts. One dead trout (400 mm) was recovered with a barbed-treble hooked spinner still attached.

Juvenile whitefish, age class I, were noted in 15 to 25 cm (6-10 in) of water at the tail of runs and pools just before they broke into the fast water of the riffle. This habitat appeared marginal with very little holding water out of the swift current. Whether this is the area that juvenile whitefish are using during their first summer of life is still unknown. Juvenile whitefish had not been previously found (Wade et al. 1978).

Visibility was limited due to suspended aquatic vegetation but was adequate for accurate counts. Visibility got progressively better the further downstream we went. This may affect comparisons between transects in different sections.

Table 2. South Fork Boise River Creel Census

1978

Section I-Anderson Dam to Anderson Bridge

<u>Interval start. date</u>	<u>Hrs</u>	<u>Wrb</u>	<u>Fish kept</u>			<u>Fish released</u>		
			<u>Hrb</u>	<u>Wf</u>	<u>DV</u>	<u>Rb</u>	<u>Wf</u>	<u>DV</u>
27 May	376	36	0	2	2	86	22	0
24 June	398	28	2	0	0	322	40	0
22 July	521	52	2	2	0	386	0	0
19 Aug	919	85	2	28	2	1,881	427	11
16 Sept	1,433	14	0	0	0	2,694	616	0

Section II-Anderson Bridge to Indian Rock

<u>Interval start. date</u>	<u>Hrs</u>	<u>Wrb</u>	<u>Fish kept</u>			<u>Fish released</u>		
			<u>Hrb</u>	<u>Wf</u>	<u>DV</u>	<u>Rb</u>	<u>Wf</u>	<u>DV</u>
27 May	574	54	0	3	3	287	33	0
24 June	869	61	4	0	0	1,920	9	0
22 July	1,862	205	8	8	0	2,886	354	0
19 Aug	2,028	162	4	62	4	3,671	264	23
16 Sept	1,723	207	0	155	0	2,257	1,654	0

Section III-Indian Rock to Danskin Bridge

<u>Interval start. date</u>	<u>Hrs</u>	<u>Wrb</u>	<u>Fish kept</u>			<u>Fish released</u>		
			<u>Hrb</u>	<u>Wf</u>	<u>DV</u>	<u>Rb</u>	<u>Wf</u>	<u>DV</u>
27 May	686	65	0	4	4	476	40	0
24 June	1,025	72	4	0	0	2,081	10	0
22 July	1,520	137	6	6	0	1,991	167	0
19 Aug	1,203	48	2	37	2	2,406	229	14
16 Sept	1,500	135	0	135	0	2,775	1,320	0

Table 3. Estimated angling effort and catch of rainbow trout in the South Fork Boise River from Anderson Ranch Dam to Danskin Bridge for the third quarters, 1974 to 1978.

Year	Quarter dates	Angler hours	Caught and released #	~o	Harvested #	%	Total	Fish/hour	Reference
1974 ^{1/}	20 July - 11 October	15,306	1,318	11	10,153	89	11,471	0.75	Beach 1975
1976 ^{2/}	24 July - 15 October	8,169	5,147	87	786	13	5,933	0.73	Mate 1977
1977	23 July - 14 October	7,744	8,146	92	670	8	8,816	1.14	Mate 1978
1978	22 July - 13 October	12,709	20,947	95	1,069	5	22,016	1.73	
Percent increase since 1976 to present for third quarter.		56	307	9	36	-62 ^{3/} -160	271	137	

1/ Last year of general trout regulations and hatchery introductions

2/ special regulation began

3/ Even though there has been an increase in number of rainbow harvested it has increased much slower than the total catch.

Table 4. Number of trout counted in transects from each census section, 3-6 October 1978

Transect	Rainbow	Dolly Varden	Fish/km	
			Tot.	(Fish/mi)
1 -- 1.3 km (0.8 mi) above Anderson Bridge to bridge	359	0	359	276 (449)
2 -- From Reclamation Village boat ramp to 1.9 km (1.2 mi) downstream	214	0	214	113 (178)
3 -- 1.6 km (1.0 mi) above Cow Creek Bridge to bridge	292	2	294	184 (294)

Water flows at 232 cfs since 5 September 1978.

DISCUSSION

Creel Census

The South Fork of the Boise River is rapidly becoming a favorite fly-fishing stream for many Southern Idaho anglers. Pressure and catch rates have increased substantially this summer and fall. Even with more feeding selectivity exhibited by the resident trout, anglers continue to improve on their success. Compliance with regulations has improved greatly.

Catch and effort is still increasing over previous census figures and a plateau for catch rates has not been reached. The need for further monitoring of this system is necessary to determine what the ultimate angler success will be and thus properly evaluate the special regulations.

Snorkel Transects

Snorkeling seems to be a viable method of trout enumeration in the South Fork at low flows, but it is only an index of abundance, not an actual population estimate. This is due to the relatively small area of visibility as compared to the size of the river even at low flows. Counts of fish in the summer were not feasible because of limited visibility and the swiftness of flow at that time of year (Wade et al. 1978). For seasonal or yearly comparisons, timing is important and counts should be made on or near the same dates and at the same flow. Also the number of days since the flows were reduced could affect the counts because of fish movements.

The reduced number of fish on the roaded side in Transect 3 is probably due to angler activity being concentrated near the road. Within this transect the road is right next to the river with little obstruction of view or access by vegetation. The other two transects are more removed from direct roading at most points. Additional counts will be made to verify this difference in density.

Flow Reductions

On 4 September the flows at Anderson Ranch Dam were reduced from 1,550 cfs to 232 cfs in 3 hours. This resulted in the stranding of trout and whitefish in pools of some side channels. A salvage operation was undertaken with electrofishing gear by the YACC crews on the South Fork. A total of 287 fry, 51 rainbow >30.5 cm (>12 in), and 59 whitefish were salvaged from two side channels. Salvage operations are not complete at this time. A visual survey of pools already shocked shows several hundred rainbow fry still present 1 month after the flows were reduced. These fish were missed during salvage operations because of the heavy vegetation and large substrate in these pools. Whether these fry will survive until flows are again increased for peaking purposes in the winter is unknown. There is presently some subsurface water percolating into some of these pools providing adequate water quality for survival. Some mortality from bird predation has been witnessed. The survival of these fry will be monitored. Slower flow changes may allow these fish the opportunity necessary for escape to the main river.

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