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DEPARTMENT OF FISH AND GAME

Jerry M. Conley, Director

FEDERAL AID TO FISH AND WILDLIFE RESTORATION

Job Performance Report

Project F-71-R-9



REGIONAL FISHERY MANAGEMENT INVESTIGATIONS

- Job V-b. Region 5 Lowland Lakes Investigations Chesterfield Reservoir, Regional Waters
- Job V-c. Region 5 Blackfoot River, Portneuf River, Regional Waters
- Job V-d. Region 5 Technical Guidance

by

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JOB PERFORMANCE REPORT

STATE: Idaho NAME: Regional Fisheries Management
Investigations
PROJECT NO.: F-71-R-9 TITLE: Region 5 Lowland Lakes
JOB NO.: V-b Investigations- Chesterfield
Reservoir, Blackfoot Reser-
voir, Regional Waters

PERIOD COVERED: 1 January 1984 - 31 December 1984

ABSTRACT

During the period 12 May through 14 September 1984 we estimated that 5,460 anglers fished Chesterfield Reservoir. They harvested 8,272 hatchery rainbow, 663 fall chinook and 494 unspecified rainbow. Fall chinook made up 62 percent of the catch in February and March 1985 and only 7 percent of the catch during the census period. When asked, 699 of the anglers responded that they were satisfied with the angling while 31 percent were unsatisfied. The overall return of planted catchable-size rainbow is probably in the neighborhood of 65 percent to 70 percent.

In June 1983 and June 1984 we planted 290,170 and 423,150 fingerling Bear Lake cutthroat in Blackfoot Reservoir, respectively. The fish were released at the mouth of the Little Blackfoot River and had been treated with morpholine in the hatchery prior to release. The stream was treated for two weeks after release in an attempt to imprint them. Forty-six percent of the fish released in 1983 were fin clipped for future identification.

During the period 26 May through 29 October 1984 we checked 1,601 anglers who fished Blackfoot Reservoir. They fished 6,920 hours and caught 661 hatchery rainbow, 38 wild rainbow, 123 hatchery cutthroat, 85 wild cutthroat and 51 Bear Lake cutthroat. In both 1983 and 1984, reservoir fishing was considerably slower than in 1982. This was especially true in June and appeared to be due to high water conditions. Returns of Bear Lake cutthroat planted the previous year were reduced because of this high water.

Walleye plants were continued at Oneida Reservoir in 1984 when we released 3,008,520 fry. Considerable interest has developed in the reservoir's walleye fishery. One limit of five fish averaged 420 mm (16.50"). Gill net sampling indicates that a dramatic drop in yellow perch numbers has occurred at the reservoir, probably as a result of walleye predation. However, perch size has remained fairly constant over the years.

A marked increase in Utah suckers has occurred the past few years at Daniels Reservoir. It appears the suckers have deleteriously affected both the trout catch rate and trout sizes.

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OBJECTIVES

Gather information on the catch and angler satisfaction at Chesterfield Reservoir.

Gather information on angler satisfaction, catch and returns of trout planted in Blackfoot Reservoir.

Gather information on the fish populations in Oneida Reservoir, Daniels Reservoir, Deep Creek Reservoir and Devil's Creek Reservoir.

Gather catch rate information on other fishing waters in the region.

CHESTERFIELD RESERVOIR

Techniques

Angler Use and Harvest

We conducted a creel census and made catch estimates from 12 May through 14 September 1984 at Chesterfield Reservoir. I divided the creel census into two-week intervals and chose the first Saturday, second Sunday and one random weekday during each two-week period as count days. I also divided each count day into four different blocks of time with each block covering three hours equal time between each interval. I then randomly picked a counting time in each three-hour block starting on the hour. We obtained total hours fished by multiplying the mean number of anglers per count times the daylight hours times the number of days of that class (Saturday, Sunday, or weekday) in the interval. I multiplied the catch per hour for each species by the estimated hours fished to obtain total catch by species.

Angler Questionnaire

Anglers fishing Chesterfield Reservoir were asked the following questions:

1. Are you satisfied with fishing in general at Chesterfield Reservoir?
Yes _____
No _____
2. If not satisfied why? (Check one if answered "no" above.)
 - a. Low number of fish caught. _____
 - b. Small size of fish caught.
 - c. Dislike present regulations.
 - d. Other.
3. How many times do you fish Chesterfield Reservoir a year?
0-5 _____ 6-15 _____ 16 or over _____
4. How would you rate fishing in the immediate past (one year) at Chesterfield Reservoir?
Good _____ Fair _____ Poor _____

Results

Angler Use and Harvest

During the 1984 census period we interviewed 14 percent of the estimated 5,460 anglers who fished Chesterfield Reservoir and checked 14 percent of the estimated 22,174 hours fished. Anglers harvested an estimated 8,272 hatchery rainbow (86 percent of the catch), 663 fall chinook (7 percent of the catch), and 494 unspecified rainbow (5 percent of the catch) (Table 1).

Table 1. Estimated angler use and harvest at Chesterfield Reservoir during the period 12 May through 14 September 1984.

Interval starting date	Number anglers	Number hours	Harvest (kill)					Total
			Hatchery rainbow	Unspecified rainbow	Cutthroat	Fell chinook	Brown trout	
12 May	793	2,135	243	13	13	6	40	315
26 May	498	1,488	143	7	0	7	7	164
9 June	410	1,962	618	57	25	75	10	785
23 June	554	2,152	445	24	38	47	24	578
7 July	587	3,590	470	126	0	47	18	661
21 July	505	2,807	794	130	5	237	0	1,166
4 August	1,011	4,029	2,160	120	0	177	8	2,465
18 August	668	2,401	775	17	0	31	7	830
1 September	<u>434</u>	<u>1,810</u>	<u>2,624</u>	<u>0</u>	<u>0</u>	<u>36</u>	<u>0</u>	<u>2,660</u>
Totals	5,460	22,174	8,272	494	81	663	114	9,624
Percent			86	5	1	7	1	100

Most of the unspecified rainbow were probably of hatchery origin. However, fin condition precluded categorizing them. In addition, an estimated 114 brown trout and 81 cutthroat were also taken. Anglers averaged 1.62 trout and 0.35 trout per hour harvested (Table 2).

In February 1985 we checked 16 anglers who had fished 76 hours and caught 21 hatchery rainbow and 20 fall chinook. In March 1985 we checked 149 anglers who had fished 523 hours and caught 77 hatchery rainbow, 3 wild rainbow and 148 fall chinook. Thus, fall chinook made up 62 percent of the winter catch and only 75 percent of the summer catch.

Bank anglers comprised 53 percent of the fishermen and boat anglers 47 percent. We did not check any anglers using tubes during the census. Sixty-eight percent of the anglers fished primarily with bait and 38 percent with lures.

Ninety-three percent of the reservoir anglers were from Idaho and 7 percent from other states. Forty percent of the nonresident anglers were from Utah with the remainder primarily from other western states. Of the resident anglers, 79 percent were from Bannock County, 10 percent from Caribou County, 4 percent from Bingham County, and the remaining 7 percent from other southeast Idaho counties.

During the 1984 census period, we measured 776 hatchery rainbow trout. Of the total, 42 percent were greater than 305 mm total length and 14 percent were greater than 355 mm. Overall, hatchery rainbow averaged 322 mm and 296 g, while fall chinook averaged 311 mm and 189 g (Table 3). The mean total length of 22 brown trout measured during the census was 364 mm and the length of 14 cutthroat was 236 mm. Plants of catchable-size rainbow trout are made annually in Chesterfield Reservoir (Table 4). Brown trout plants in the reservoir were discontinued in 1981, and fall chinook plants started in 1982.

Angler Questionnaire

To obtain questionnaire information regarding fishing satisfaction, we contacted 395 anglers. Sixty-nine percent of the total responded that they were satisfied with the fishing, and 31 percent were not satisfied with the fishing at Chesterfield Reservoir. Seventy-seven percent of the unsatisfied anglers responded that they were not satisfied because of the low number of fish caught, 21 percent were not satisfied because of the small size of fish caught and 2 percent listed other factors such as water conditions (waves) or the weather. Of 404 anglers questioned regarding the number of times per year they fished Chesterfield Reservoir, 59 percent responded that they fished it five times or less, 26 percent fished it between 6 and 15 times and 15 percent fished it 16 times or over per year. Of 378 anglers questioned on how they would rate fishing the immediate past year at Chesterfield Reservoir, 31 percent said good, 40 percent said fair and 29 percent said poor.

Table 2. Number of anglers checked, hours fished, and catch at Chesterfield Reservoir during the period 12 May through 14 September 1984.

Interval starting date	Number anglers checked	Number hours fished	Catch (kill)					Total	Trout per angler	Trout per hour
			Hatchery rainbow	Unspecified rainbow	Cutthroat	Fall chi nook	Brown trout			
12 May	117	315	36	2	2	1	6	47	0.40	0.15
26 May	70	209	20	1	—	1	1	23	0.33	0.11
4 June	114	546	172	16	7	21	3	219	1.92	0.40
23 June	71	276	57	3	5	6	3	74	1.04	0.27
7 July	61	373	49	13	—	5	2	69	1.13	0.19
21 July	85	439	141	22	1	40	—	214	2.52	0.49
4 August	125	498	267	15	—	22	1	305	2.44	0.61
18 August	81	291	94	2	—	8	1	105	1.30	0.36
2 September	<u>48</u>	<u>200</u>	<u>29</u>	—	—	<u>4</u>	<u>17</u>	<u>33</u>	<u>0.69</u>	<u>0.17</u>
Total	672	3,147	875	74	15	108	17	1,089	1.62	0.35

Table 3. Sizes of hatchery rainbow trout and fall chinook caught at Chesterfield Reservoir during the period 12 May through 14 September 1984.

Interval starting date	Hatchery		Rainbow		Fall		Chinook	
	Length Mean	(mm) (N)	Weight Mean	(g) (N)	Length Mean	(mm) (N)	Weight Mean	(g) (N)
12 May	347	35	328	28	320	1	350	1
26 May	357	20	333	5	203	1	-	1
9 June	350	162	435	18	251	16	-	-
23 June	367	46	-	-	291	4	-	-
7 July	368	39	383	4	293	5	250	4
21 July	288	157	262	54	423	21	160	22
4 August	297	225	253	29	256	15	165	2
18 August	301	78	252	18	278	7	325	2
1 September	<u>506</u>	<u>14</u>	=	=	<u>278</u>	<u>3</u>	=	=
Means and total s	322	776	296	156	311	73	189	31

Table 4. Fish plants by year at Chesterfield Reservoir, 1981-1984.

Year	Rainbow trout		Brown trout		Fall	chinook
	Number	Pounds	Number	Pound		
1981	29,600	14,150	102,600	200	-	-
1982	15,080	5,800	-	-	15,450	750
1983	15,120	3,200	-	-	4,005	150
1984	15,400	4,400	-	-	8,000	63

Discussion

Historically, Chesterfield Reservoir has contained a large population of Utah chubs. In 1977 we treated it with rotenone in an attempt to control them. As a result of this treatment, Utah chub numbers were down for only a couple years. Since 1977, we have made plants of various fish species such as brown trout or fall chinook which might be considered piscivorous in an attempt to provide larger fish to the angler's creel. Also, annual cutthroat trout plants were terminated after the 1979 release because of the low contribution they were making to the creel. From 1979-1981 we made annual brown trout plants but discontinued them as numbers caught were low and sizes comparable to other trout.

Again, in an attempt to create a "trophy" type fishery, plants of fall chinook have been made annually in Chesterfield Reservoir since 1982. To date, the growth and returns of these fish have been somewhat disappointing, as they averaged 311 mm (12.20") total length during the census. This compares to a mean length of 322 mm (12.70") for the hatchery rainbow trout.

Fall chinook make up a higher percent of the creeled fish during winter fishing than during the summer months. While making up only 7 percent of the summer catch, they made up 62 percent of the winter catch. Consequently, the plants of these fish should be continued.

Typically the spring-summer-fall fishery is supported by the plants of hatchery rainbow trout. These made up an estimated 86 percent of the fish caught during the census. Most unspecified rainbow caught were in reality probably hatchery-released trout that showed no evidence of fin loss. Therefore, the contribution of hatchery rainbow to the creel is probably a little higher than the estimated 86 percent.

Since 1982, we have planted 15,000+ rainbow trout annually in Chesterfield Reservoir. Division of the estimated hatchery rainbow catch during the 1984 census by the mean number planted per year for the last three years (8,272/15,200) indicated that 54 percent of one year's annual plant was taken during the census period. We have no estimates of numbers of hatchery rainbow trout caught at times other than during our census period; however, the reservoir receives a considerable amount of ice fishing pressure. In February and March 1985, hatchery rainbow made up 36 percent of the fish caught. Considering the estimated harvest of hatchery rainbow trout during the census and fishing pressure at other times of the year, a high percent of the planted trout are harvested by anglers. The overall catch of the planted rainbow trout is probably in the neighborhood of 65 percent to 70 percent.

From 1982-1984 we released an annual average of 2,027 kg of hatchery rainbow in the reservoir. During the 1984 census, hatchery rainbow caught by anglers averaged 296 g each, and total harvest of 2,449 kg. If the estimated harvest of these planted fish is 70 percent of total,

the weight of planted fish caught would be an estimated 3,149 kg. This is a good rate of return from these hatchery-released fish and is indicating considerable growth.

Anglers are generally satisfied with fishing at Chesterfield Reservoir, with 69 percent responding in the affirmative. Results were somewhat different though when they were asked to rate fishing (good, fair, poor). The satisfied anglers (69 percent) compares favorably with the sum of the good and fair fishing responses (71 percent).

Management Direction/Goals

History

At capacity, Chesterfield Reservoir covers 1,600 surface acres and contains 23,695 acre feet of water. Consequently, it is large enough so that late summer drawdown due to irrigation demands generally do not seriously affect the fishery. One exception occurred in 1977 when it was treated with rotenone so as to reduce nongame fish numbers. This treatment was only partially successful. Prior to this treatment, an occasional large cutthroat 3.70 kg to 4.50 kg (8-10 lb) was taken, generally through the ice. This increased interest in reservoir fishing. In an effort to establish a "trophy fishery" at the reservoir, we have planted species such as brown trout and fall chinook in hopes that they would utilize the nongame fish populations as a food forage base. To date, the growth and size of these fish species have been similar to the rainbow trout.

To provide additional fishing opportunity, the reservoir was opened to year-round fishing. Anglers often combine their winter fishing trips with other forms of recreation such as snowmobiling. Consequently, winter fishing has been quite popular.

Management Options

- A. Provide a trophy fishery.

This alternative is feasible only if selected species are available which could grow fast, resulting in a number of larger fish in the creel. Unless a fish species looks very promising, it is questionable that a trophy fishery could be developed. Therefore, these attempts should be discontinued until such time as a promising trophy species appears.

- B. Continue the year-round fishing season at the reservoir.

The year-round fishing at Chesterfield Reservoir is quite popular as anglers combine ice fishing with other forms of outdoor recreation. Year-round fishing at same area waters have resulted in heavy concentrations of anglers at general

fishing season waters during the early part of the fishing season. The season at Chesterfield Reservoir helps provide the needed mix of general season/year-round season waters.

C. Continue plants of catchable size rainbow trout.

Provide an overall catch rate of 0.40 fish per hour. Returns from plants of catchable-size hatchery released rainbow trout are excellent, as upward to 70 percent of the 15,000+ fish planted annually appear harvested. A minimum goal of 15,000+ rainbow trout should be annually planted in the spring with a maximum goal of about 25,000+ trout.

Public Opinions

Results of questionnaire surveys conducted at the reservoir during the 1984 census indicated that anglers were "satisfied" (69 percent) with the fishing and that 71 percent would rate it either "good" or "fair" as opposed to "poor." Consequently, it appears that anglers who fish these waters are generally happy with the management direction of the department. Restrictive regulations were not considered as feasible by Department personnel.

Future Management Directions

Management direction for the next five year period (1986-1990) should be geared to provide yield of stock trout. An overall goal of 0.40 fish per hour should be maintained with a mean size of 300 mm.

BLACKFOOT RESERVOIR

Techniques

Bear Lake Cutthroat Plants

On 19 June 1984, we released 423,150 Bear Lake cutthroat, totaling 9,843 kg (21,700 lb) in the Blackfoot Reservoir. The fish were released at the mouth of the Little Blackfoot River at the downstream footbridge (near Whitelocks Resort). To reduce bird predation, the fish were released at night.

To reduce straying and interbreeding with the Blackfoot Reservoir cutthroat that spawn in the upper Blackfoot River and tributaries, we imprinted these fish with the chemical morpholine at a concentration of 5×10^{-5} mg/l. The duration of the morpholine drip, both at the Grace Hatchery and at the Little Blackfoot River, and the equipment used to dispense the morpholine was the same as in 1983 (Helmer, 1984).

To evaluate returns of the Bear Lake cutthroat from Blackfoot Reservoir, we adiposed fin clipped 133,424 (46 percent) of the fish planted in 1983. In 1984, we conducted a reservoir creel check in order to better evaluate their returns. A creel census clerk worked reservoir access areas where maximum numbers of anglers could be contacted.

Angler Questionnaire

Anglers fishing Blackfoot Reservoir were asked the following questions:

1. Are you satisfied with fishing in general at Blackfoot Reservoir?
Yes _____ No _____
2. If not satisfied why? (Check one if answered "no" above).
 - a. Low number of fish caught _____
 - b. Small size of fish caught _____
 - c. Dislike present regulations _____
 - d. Other _____
3. How would you rate fishing the past year at Blackfoot Reservoir?
Good _____ Fair _____ Poor _____
4. How many times do you fish Blackfoot Reservoir per year?
0-5 _____ 6-15 _____ 16+ _____
5. Had many years have you fished Blackfoot Reservoir?
0-5 _____ 6-15 _____ 16+ _____

Results

Creel Census

During the period 26 May - 29 October 1984, we checked 1,601 anglers who fished Blackfoot Reservoir. They fished 6,920 hours and caught 661 hatchery rainbow, 38 wild rainbow, 123 hatchery cutthroat, 85 wild cutthroat and 51 Bear Lake cutthroat for a total of 958 trout (Table 5). Overall, they averaged 0.60 trout per angler and 0.14 trout per hour. With the exception of the first two week period when the reservoir was opened to only bank fishing, anglers averaged between 0.12 and 0.20 trout per hour.

A comparison of catch rates in both June and October for the past three years indicated that fishing was considerably slower in 1983 and 1984 than in 1982; this was especially true in June (Table 6). The primary reason for the slower fishing in both years appeared to be the water conditions. Both 1983 and 1984 were extremely high water years. The mean daily discharge of the Blackfoot River immediately upstream from the reservoir in June 1982 was 394 cfs, while it was 442 cfs and 489 cfs, respectively, in June 1983 and 1984. Although catch data from the Blackfoot River is scarce, anglers reported good fishing in this stream section on both 1983 and 1984. Many of the fish planted in the reservoir apparently move downstream during high water years and are caught in the river. This high water out migration may result in slower reservoir fishing but better river fishing downstream.

The percentage of anglers fishing from a boat versus the bank changes from June through October (Table 7). Boat use in June is biased upward as many anglers were contacted on the opening day of the boat season. In June 1984, 84 percent of the anglers contacted were fishing with lures, in October only 10 percent.

The length frequency distribution of hatchery rainbow trout caught in 1984 shows the greatest numbers of trout occurring in the 305 mm - 329 mm length group (20.50 percent) (Table 8). A second mode occurs in the 432 mm - 456 mm length group (10.10 percent). Since rainbow trout of different sizes are planted throughout the field season, it would be only conjecture to say when the fish were planted that make up the greatest number of trout in the different length groups.

The mean total length and weight of hatchery rainbow trout during the census was 354 mm, and 465 g, respectively (Table 9). Wild rainbow averaged 408 mm and 716 g.

The mean total length of 134 hatchery cutthroat caught at the reservoir in 1984 was 350 mm, and the mean size of 109 wild cutthroat was 409 mm (Table 10). The mean total length of 52 Bear Lake cutthroat and the mean total weight of 26 of the same fish was 348 mm and 409 g, respectively.

Table 5. Number of anglers checked, hours fished and catch at Blackfoot Reservoir during the period 26 May through 29 October 1984.

Interval starting date	Number anglers checked	Number hours fished	Catch Kill)					Totals	Trout per angler	Trout per hour
			Hatchery rainbow	Wild rainbow	Hatchery cutthroat	Wild cutthroat	Beer Lake cutthroat			
26 May	379	1,549	59	27	6	20	3	115	0.30	0.07
9 June	231	997	46	3	38	13	19	119	0.52	0.12
23 June	161	729	62	—	43	14	23	142	0.88	0.20
7 July	99	438	57	1	4	4	4	70	0.71	0.16
21 July	119	389	46	5	12	8	2	73	0.61	0.19
4 August	130	501	73	1	—	7	—	81	0.62	0.16
18 August	130	504	85	—	2	6	—	92	0.71	0.18
1 September	171	631	92	1	10	4	—	107	0.30	0.17
15 September	94	418	40	—	8	1	—	49	0.52	0.12
29 September	68	630	86	—	—	7	—	93	1.37	0.15
13 October	<u>19</u>	<u>134</u>	<u>16</u>	<u>=</u>	<u>=</u>	<u>1</u>	<u>=</u>	<u>17</u>	<u>0.90</u>	<u>0.13</u>
Totals	1,601	6,920	661	38	123	85	51	958	0.60	0.14

Table 6. Anglers checked, hours fished, and catch at Blackfoot Reservoir for June and October of 1982, 1983, and 1984. All anglers were checked upon completion of fishing.

Month and Year	Number Anglers Checked			Total hours fished	Total Fish Caught					Trout per angler	Trout per hour	
	Resident	Nonresident	Total		Wild rainbow	Hatchery rainbow	Wild cutthroat	Hatchery cutthroat	Bear Lake cutthroat			
June 1982	252	19	271	1,341	49	534	117	91	—	791	2.92	0.59
June 1983	334	34	368	2,272	7	255	37	89	—	388	1.05	0.17
June 1984	504	79	583	2,395	8	110	31	3	38	190	0.33	0.08
Oct. 1982	113	35	148	916	29	133	16	11	—	189	1.28	0.21
Oct. 1983	198	119	317	2,685	6	404	41	20	—	471	1.49	0.18
Oct. 1984	62	25	87	764	—	102	8	—	—	110	1.26	0.14

Table 7. Number of boat vs. bank anglers, anglers per party, and method at Blackfoot Reservoir in 1982, 1983, and 1984. The number in parentheses is percent.

Month and year	Boat fishing	Bank fishing	Total	Anglers per party	Number parties fishing with	
					Lures	Bait
Jun. 1982	99(96)	4(4)	103(100)	2.60	96(95)	5(5)
Jun. 1983	124(90)	14(10)	138(100)	2.70	121(88)	17(12)
Jun. 1984	<u>178(83)</u>	<u>36(17)</u>	<u>211(100)</u>	2.50	180(84)	35(16)
Total Jun.	233(93)	18(7)	241(100)	2.70	217(91)	22(9)
Oct. 1983	58(41)	82(59)	140(100)	2.30	36(26)	102(74)
Oct. 1984	10(26)	28(74)	38(100)	2.20	4(10)	35(90)
Total Oct.	68(38)	110(62)	178(100)	2.30	40(23)	137(77)

Table 8. Length frequency of hatchery rainbow trout caught at Blackfoot Reservoir in 1984.

Interval starting date	Total Length [mm]													Total	
	<229	229- 253	254- 270	270- 304	305- 320	330- 355	356- 380	381- 405	406- 431	432- 456	457- 482	483- 507	508- 533		>534
26 May	-	-	6	2	-	3	-	5	19	11	7	4	2	-	59
9 June	-	1	3	1	1	2	2	2	9	11	11	1	1	-	45
23 June	-	-	-	11	15	3	8	8	4	8	4	1	-	-	62
7 July	-	2	4	11	13	6	3	1	2	7	11	-	-	-	60
21 July	-	2	2	3	13	6	6	1	1	7	2	3	-	-	46
4 August	1	1	3	11	22	11	4	7	1	6	3	2	1	-	73
18 August	7	3	9	12	24	4	2	8	4	1	5	1	-	-	80
1 September	1	4	12	16	20	16	7	3	1	4	4	-	-	1	89
15 September	-	1	4	13	8	6	5	2	1	2	1	-	-	-	43
29 September	-	1	5	3	9	11	5	2	1	5	2	-	-	1	45
13 October	<u>1</u>	<u>1</u>	<u>1</u>	<u>-</u>	<u>1</u>	<u>4</u>	<u>2</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>1</u>	<u>-</u>	<u>-</u>	<u>11</u>
Total	10	16	49	83	126	72	44	39	43	62	50	13	4	2	613

Table 9. Sizes of rainbow trout caught at Blackfoot Reservoir during the 1984 census period. The number in parentheses is the sample size.

Interval starting date	Hatchery rainbow		Wild rainbow	
	Mean total length-mm	Mean weight-g	Mean total length-mm	Mean weight-g
26 May	413(59)	609(9)	407(27)	920(1)
9 June	413(46)	785(15)	417(3)	600(1)
23 June	365(62)	570(30)		
7 July	358(60)	683(15)	360(1)	500(1)
21 July	362(46)	419(24)	414(5)	725(4)
4 August	349(73)	431(40)	484(1)	-
18 August	325(80)	479(37)	-	-
1 September	331(90)	391 (39)	-	-
15 September	326(43)	328(18)	-	-
26 September	347(45)	-	-	-
13 October	<u>326(11)</u>	=	=	=
Means and Totals	354(615)	465(227)	408(37)	716(7)

Table 10. Size of cutthroat trout caught at Blackfoot Reservoir during the 1984 census. The number in parentheses is the sample size.

Interval starting date	Hatchery cutthroat		Wild cutthroat		Beer Lake cutthroat	
	Mean total Length ⁻ mm	Mean weight ⁻ g	Mean total length ⁻ mm	Mean weight-g	Mean total length ⁻	Mean weight ⁻ g
26 May	387(7)	438(3)	400(22)	529(9)	327(3)	262(2)
9 June	439(13)	694(4)	358(38)	525(18)	344(19)	385(10)
23 June	357(65)	470(39)	439(14)	1,022(9)	354(23)	423(12)
7 July	380(8)	725(2)	434(4)	875(2)	362(4)	—
21 July	288(14)	240(10)	412(8)	558(3)	353(3)	400(2)
4 August	—	—	416(7)	638(4)	—	—
18 August	309(2)	—	463(6)	1,060(5)	—	—
1 September	316(10)	410(5)	357(6)	400(4)	—	—
15 September	297(8)	458(4)	—	—	—	—
29 September	<u>289(7)</u>	<u>—</u>	<u>345(4)</u>	<u>—</u>	<u>—</u>	<u>—</u>
Means and Totals	350(134)	697(87)	409(109)	740(54)	348(52)	409(26)

In 1983, we planted 290,179 Bear Lake cutthroat in Blackfoot Reservoir. A total of 133,424 (46 percent) of these fish were adipose clipped for future identification. The fish had a mean total length and weight of 144 mm and 20 g, respectively. If growth and returns were similar to previously planted rainbows, the largest majority of these fish could be expected to enter the creel during the 1984 fishing season.

In 1984, we checked 51 adipose fin clipped Bear Lake cutthroat. We estimate this represents 111 Bear Lake cutthroat caught by the anglers checked in 1984. Based on the 1979 effort estimates, we checked 9.60 percent of the total effort in 1984. Using 1979 as a base and extrapolating, the harvest of 1983 planted Bear Lake cutthroat during 1984 was 1,200. The same calculation for hatchery rainbow shows an estimated harvest of 6,900 fish in 1984. The estimated return for hatchery rainbow was 8.40 percent and for Bear Lake cutthroat 0.40 percent.

Angler Questionnaire

To obtain questionnaire information regarding fishing satisfaction, we contacted 391 anglers. Fifty-six percent of this total responded that they were satisfied with the fishery and 44 percent were unsatisfied. Eighty-nine percent of the unsatisfied anglers responded that they were not satisfied because of the low number of fish caught. Of 374 anglers questioned regarding the number of times per year they fished Blackfoot Reservoir, 54 percent responded that they fished it five times or less; 33 percent fished it between 6 and 15 times and 13 percent fished it 16 times or over per year. Of 365 anglers questioned on how they would rate fishing in the immediate past year, 34 percent said good, 39 percent said fair and 27 percent said poor.

Discussion

The 1983 and 1984 water years were two of the highest on record. This may have increased out-migration of trout from the Blackfoot Reservoir and reduced reservoir catch rate. Consequently, during a "normal" water year, we might expect higher returns of planted fish than occurred in either 1983 or 1984. The return to the creel of 8.40 percent rainbow compares to 0.40 percent for Bear Lake cutthroat harvest in Blackfoot Reservoir in 1984.

Initially, it appears that the returns of Bear Lake cutthroat were very low. However, one would expect them to be lower than the rainbow as they were released at a much smaller size. They also may be more inclined to migrate out of the reservoir than the hatchery rainbow because of the size differential. The vulnerability of the Bear Lake cutthroat to harvest may be lower than hatchery rainbow or may be delayed to later years. Returns from the groups of marked 1983 planted trout should be monitored during the 1985 fishing season.

Recommendations

1. Continue plants of Bear Lake cutthroat in Blackfoot Reservoir until returns to the creel can be properly assessed.
2. Continue the morpholine treatments of these fish both in the hatchery and at the planting location.
3. Use the same techniques and controls on these fish as in the past, i.e., treat with morpholine the same amount of time, raise them in the same hatchery, year-to-year plants of fish should be of the same size and numbers, and the fish should be released at night.
4. Conduct a quantified creel census on the Blackfoot River below the dam to document the amount of emigration from Blackfoot Reservoir.

ONEIDA RESERVOIR

Techniques

We planted 3,008,520 walleye fry in Oneida Reservoir on 13 April 1984. We also continued our fish population studies in Oneida Reservoir by sampling with gill nets.

Results

From 1976 through 1984 we have planted 6,983,520 walleye fry in Oneida Reservoir (Table 11). We have released the majority of these fish near the upper end of the reservoir; however, in 1984 they were released near the darn because of access conditions. In both 1983 and 1984 we released the fish at night after a two-hour tempering period.

The number of fish caught by gillnetting at Oneida Reservoir has varied considerably (Table 12). This may be due to yellow perch spawning movement, reduced net effectiveness because of algae problems and a reduction in yellow perch numbers. Since 1978, with the exception of 1982, a dramatic drop in yellow perch numbers seems to have occurred. Very likely this drop in yellow perch is a result of increased walleye predation.

Although sample size was small in 1983 and 1984, it appears that the mean size of yellow perch at Oneida Reservoir has remained fairly constant (Table 13). In 1984, yellow perch averaged 171 mm (6.70") and in 1978 also 171 mm.

We had numerous reports of walleye being caught at Oneida Reservoir in 1984. There appeared to be a lot of interest in them by anglers living in the Preston, Soda Springs, Pocatello and Idaho Falls areas. We received numerous questions regarding them from anglers in the Pocatello-Idaho Falls area. On 23 June 1984, I checked a limit of five fish. They had a mean total length of 420 mm and weight of 666 g.

Discussion

To date, the walleye plants in Oneida Reservoir have been very successful, as evidenced by the sizes of fish caught in relation to the years walleye were planted. As a result of the establishment of walleye, anglers have shown a considerable amount of interest in fishing Oneida Reservoir. Gill net sampling indicates the yellow perch population has declined considerably, probably as a result of walleye predation. Annual plants of walleye should be continued. Gillnetting to monitor changes in the reservoir's fish population should be modified to increase sample size. Spring and fall gill nets set in varied locations and shoreline electrofishing will be initiated. The potential of experimental forage introduction will be investigated and initiated, if feasible, in 1986.

Table 11. Number of walleye fry planted in Oneida Reservoir.

Date planted	Number planted
13 April	525,000
13 April	1,000,000
5 May 1978	250,000
10 May 1979	700,000
8 April	1,500,000
13 April	<u>3,008,520</u>
	6,983,520

Table 12. Number of fish captured in gill nets at Oneida Reservoir, 1973 and 1978-84.

Year	Number of net sets	Yellow perch	Bluegill	Walleye	Mountain whitefish	Utah chub	Utah sucker	Carp	Total
1973	3	724	21	—	2	3	33	2	785
1978	7	833	—	1	2	5	46	4	691
1979	2	380	—	1	—	23	11	3	418
1980	2	123	—	20	—	40	8	2	193
1981	2	98	—	3	—	2	30	—	133
1982	3	874	—	11	—	—	—	1	693
1983	3	12	—	1	—	—	17	—	30
1984	3	8	—	1	—	—	12	2	26

Table 13 . Mean total length of yellow perch and walleye captured in gill nets at Oneida Reservoir. The number in parentheses is the sample size.

Date	Mean total length - mm	
	Yellow perch	Walleye
31 July 1973	189 (27)	-
25 May 1978	171 (57)	-
20 September 1978	177 (90)	348 (1)
10 May 1979	173 (40)	193 (1)
21 April 1980	182 (123)	212 (20)
18 June 1983	200 (14)	376 (1)
23 June 1984	171 (8)	448 (1)

DANIELS RESERVOIR

Techniques

We conducted gill net sampling and collected creel census information at Daniels Reservoir to evaluate its fish populations, fishery and regulations.

Results

Gillnetting at Daniels Reservoir indicates that the numbers of Utah suckers have been increasing considerably the last few years (Table 14). Overnight net sets captured 71 Utah suckers in 1982 and 255 in 1984. In addition, spring trout numbers (the sets were made before any trout releases that year) are down. Only one rainbow and two cutthroat were captured in gill nets in 1984.

Catch rates at Daniels Reservoir during late May and early June have declined from 1982 through 1984 (Table 15). In 1982, anglers averaged 0.85 trout and 0.31 1-rout per hour. In 1984, they averaged only 0.69 trout and 0.17 trout per hour. The average number of trout planted per year during this four-year period has remained fairly constant.

The mean total length and weight of hatchery rainbow trout captured by anglers at Daniels Reservoir was smaller in 1984 than in 1983 (Table 16), but comparable to trout taken in 1982. Condition factors have declined from 1.30 in 1982 to 1.00 in 1983. The reduction in size from 1983 to 1984 without reducing condition factor is indicative of increased harvest mortality, not reduced growth.

The increased number of Utah suckers in Daniels Reservoir may be having an effect on the reservoir's trout catchability. It appears in 1983 the two-trout limit probably did not decrease fishing mortality enough to increase the mean size of trout taken in 1984. The possibility of significant hooking mortality causing problems with attaining the trophy trout management goal must be investigated. Future investigations should assess trout growth and catchability in regard to both the two trout limit and the Utah sucker population.

Starting with the 1980 fishing season, a two-trout limit was placed in effect at Daniels Reservoir in an attempt to establish trophy fishing. Catch rates at Daniels Reservoir during late May and early June have declined from 1981 through 1984 (Table 15). In 1981, anglers averaged only 0.69 trout and 0.17 trout per hour. Figures for all years are for fish caught and killed. The increased numbers of Utah suckers appears to have affected the production and catch rate of trout. Also, the reservoir may be losing some of its productive capacity with age. (It is now at most 20 years old.) The average number of trout planted per year during this four-year period has remained fairly constant.

Table 14. Number of fish captured in overnight gill nets at Daniels Reservoir.

Year	Number of net sets	Number of fish captured		
		Rainbow	'Cutthroat	Utah Sucker
1972	3	3	42	-
1979	3	41	12	7
1982	2	24	3	71
1984	3	1	2	255

Table 15. Catch rates of trout at Daniels Reservoir on the opening weekend of the fishing season in 1981, 1982 and 1984, and the first two weeks of the fishing season in 1983. These figures apply to only those fish caught and killed during the years a bag limit of two trout was in effect.

Period	Anglers checked			Hours fished	Total catch			Fish per	
	Resident	Nonresident	Total		Rainbow	Cutthroat	Total	Angler	Hour
May 1981	106	109	215	454	349	15	364	1.69	0.80
May 1992	202	96	298	929	283	1	284	0.95	0.31
May-June 1983	149	141	290	1,009	213	8	221	0.76	0.22
May 1984	86	107	193	794	129	5	134	0.69	0.17

Table 16. Mean sizes of hatchery rainbow trout captured by anglers at Daniels Reservoir. The number in parentheses is the sample size.

	Mean total length-mm	Mean total weight-g	Condition factor(K)
30 May 1982	352(53)	553(34)	1.30
28 May-10 June 1983	419(124)	745(35)	1.00
26 and 27 May 1984	343(114)	402(5)	1.00

The mean total length and weight of hatchery rainbow trout captured by anglers at Daniels Reservoir was smaller in 1984 than in 1983, but comparable to trout taken in 1982. Condition factors declined from 1.30 in 1982 to 1.00 in 1983.

The increased number of Utah suckers in Daniels Reservoir may be having an effect on the reservoir's trout population from the standpoint of both catchability and growth. In addition, significant hooking mortality may be causing additional problems regarding trout sizes.

As a result of the decline in trout catch rates and sizes, the two-trout limit was removed at Daniels Reservoir starting with the 1986 fishing season. The statewide general regulations now apply.

DEEP CREEK RESERVOIR AND DEVILS CREEK RESERVOIR

Techniques

We made gill net sets at Deep Creek and Devils Creek reservoirs to assess their fish populations.

DEEP CREEK RESERVOIR

Results

The numbers of trout captured in gill nets have generally been low at Deep Creek Reservoir with cutthroat being the dominant species captured (before preseason hatchery rainbow plants) (Table 17). The mean total length and weight of the 15 cutthroat caught during the 1984 netting was 303 mm and 255 g, respectively.

DEVILS CREEK RESERVOIR

Results

The number of trout captured in gill nets have generally been low at Devils Creek Reservoir. Like at Deep Creek Reservoir, cutthroat were the dominant species captured before preseason hatchery rainbow plants (Table 18). Sampling also indicates that there were no nongame fish present in the reservoir. The mean total length and weight of 12 cutthroat caught during the 1984 sampling was 344 mm and 447 g, respectively.

CREEL CENSUS-RESERVOIRS

Popular Region 5 fishing reservoirs where we collected a considerable amount of creel census information in 198<< are listed in Table 19.

Table 17. Results of overnight gill net sets at Deep Creek Reservoir.

Date	Number of net sets	Number of fish captured		
		Cutthroat	Rainbow	Brook
19 April 1972	3	40	1	3
26 April 1979	2	9	2 ¹	-
1 May 1984	3	15	-	-

¹ Both were hatchery rainbow.

Table 18. Results of overnight gill net sets at Devils Creek Reservoir.

Date	Number of net sets	Number of fish captured		
		Cutthroat	Rainbow	Rainbow cutthroat hybrid
20 April 1972	3	12	5	-
25 April 1979	2	12	-	4
2 May 1984	3	12	2 ¹	-

¹ One was a hatchery rainbow and the other of unknown origin.

Table 19. Anglers interviewed, hours fished and catch from various reservoirs in Region 5 during 1984.

Reservoir and month	Number anglers checked			Total hours fished	Total catch			Fish Der	
	Resident	Nonresident	Total		Rainbow	Cutthroat	Total	Angler	
<u>American Falls Reservoir</u>									
January	1	-	1	2	-	-	-	-	-
April	30	-	30	120	11	-	11	0.37	0.09
June	12		12	36	2	-	2	0.17	0.06
November	<u>13</u>		<u>13</u>	<u>36</u>	<u>8</u>	-	<u>8</u>	<u>0.62</u>	<u>0.22</u>
Total	56		56	194	21		21	0.38	0.11
<u>Chesterfield Reservoir</u>									
January	7	-	7	19	9	-	9	1.29	0.47
March	<u>39</u>		<u>39</u>	<u>141</u>	<u>48</u>	<u>4</u>	52	1.33	0.37
Total	46	-	46	160	57	4	61	1.33	0.38

Table 19 (continued).

Reservoir and month	Number anglers checked			Total hours fished	Total catch		Total	Fish Der	
	Resident	Nonresident	Total		Rainbow	Cutthroat		Angier	Hour
<u>Crowthers Reservoir</u>									
May	24	10	34	56	18	1	19	0.56	0.34
November	<u>6</u>	<u>4</u>	<u>10</u>	<u>20</u>	<u>20</u>	-	<u>20</u>	<u>2.00</u>	<u>1.00</u>
Total	30	14	44	76	38	1	39	0.89	0.51
<u>Daniels Reservoir</u>									
May	86	109	195	794	140	5	145	0.74	0.18
July	<u>11</u>	<u>5</u>	<u>16</u>	<u>47</u>	<u>12</u>	-	<u>12</u>	<u>0.75</u>	<u>0.26</u>
Total	97	114	191	841	152	5	157	0.82	0.19
<u>Deep Creek Reservoir</u>									
May	2	35	37	67	17	1	18	0.49	0.27
July	9	36	45	196	80	-	80	1.78	0.90
October	3	34	37	89	76	4	80	2.16	0.90
November	<u>5</u>	<u>34</u>	<u>39</u>	101	99	5	104	2.67	1.03
Total	19	139	158	453	272	10	282	1.78	0.62

Table 19 (continued).

Reservoir and month	Number anglers checked			Total hours fished	Rainbow	Total catch		Fish Der	
	Resident	Nonresident	Total			Cutthroat	Total	Angler	Hour
<u>Devil Creek Reservoir</u>									
May	46	87	133	454	147	7	154	1.16	0.34
July	10	8	18	82	27	-	27	1.50	0.33
November	<u>4</u>	<u>10</u>	<u>14</u>	<u>36</u>	<u>20</u>	<u>-</u>	<u>20</u>	1.43	0.56
Total	60	105	165	572	194	7	201	1.22	0.35
<u>Dike Lake</u>									
May	17	2	19	81	20		20	1.05	0.25
June	8	2	10	35	20	-	20	2.00	0.57
October	<u>-</u>	<u>2</u>	<u>2</u>	<u>10</u>	<u>-</u>	<u>-</u>	<u>-</u>	<u>0.00</u>	0.00
Total	25	6	31	125	40		40	1.29	0.32
<u>Hawkins Reservoir</u>									
May	54	7	61	204	102		102	1.67	0.50
July	<u>6</u>	<u>1</u>	<u>7</u>	<u>31</u>	<u>20</u>	<u>-</u>	<u>20</u>	<u>2.86</u>	<u>0.65</u>
Total	60	8	68	235	122	-	122	1.79	0.52

Table 19 (continued).

Reservoir and month	Number anglers checked			Total hours fished	Rainbow	Total Yellow perch	Total catch Walleye	Total	Fish per Angler Hour	
	Resident	Nonresident	Total						Angler	Hour
<u>Oneida Reservoir</u>										
May	11	9	20	52	1	88	8	96	4.80	1.85
June	14		14	16	-	9	6	15	1.07	0.94
July	1	1	2	3	-	7	-	7	3.50	2.33
August	<u>2</u>	<u>2</u>	<u>2</u>	<u>4</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>2</u>
Subject	26	12	38	75	1	104	14	118	3.11	1.57
<u>St. John Reservoir</u>										
May	22	-	11	19	14	-	-	14	0.64	0.74
November	<u>2</u>	<u>5</u>	<u>7</u>	<u>19</u>	<u>21</u>	<u>2</u>	<u>2</u>	<u>21</u>	<u>3.00</u>	<u>1.11</u>
Total	24	5	29	38	35	-	-	35	1.21	0.92
<u>Springfield Reservoir</u>										
April	5	-	5	20	7	-	-	7	1.40	0.35
June	32	2	35	73	37	-	-	37	1.06	0.51
July	13	-	13	30	17	-	-	13	1.00	0.57
November	<u>20</u>	-	<u>20</u>	<u>24</u>	<u>13</u>	-	<u>2</u>	<u>13</u>	<u>0.65</u>	<u>0.54</u>
Total	70	2	73	147	74	-	-	74	1.01	0.50

Table 19 (continued).

Reservoir and month	Number anglers checked			Total hours fished	Total catch				Fish per Angler Hour		
	Resident	Nonresident	Total		Rainbow	Bluegill	Yellow perch	Largemouth bass	Total		
<u>Treasureton Reservoir</u>											
January	6	-	6	22	2	-	-	-	2	0.33	0.09
February	15	7	22	73	13	-	-	-	13	0.59	0.18
May	<u>12</u>	<u>14</u>	<u>26</u>	<u>69</u>	<u>49</u>	-	-	-	<u>49</u>	<u>1.88</u>	<u>0.71</u>
Total	33	21	54	164	64	-	-	-	64	1.19	0.39
<u>Twin Lakes</u>											
May	3	19	22	48	5	-	-	-	5	0.23	0.10
June	<u>8</u>	<u>10</u>	<u>18</u>	<u>95</u>	<u>45</u>	<u>10</u>	-	-	<u>55</u>	<u>3.06</u>	<u>0.58</u>
Total	11	29	40	143	50	10	-	-	60	1.50	0.42
<u>Weston Reservoir</u>											
January	4	5	9	15	-	-	3	-	3	0.33	0.20
February	5	2	7	36	4	-	33	8	45	6.43	1.25
May	<u>16</u>	<u>23</u>	<u>39</u>	<u>91</u>	<u>8</u>	-	<u>673</u>	11	692	17.74	7.60
Total	25	30	55	142	12	-	706	19	740	13.45	5.21

Table 19 (continued).

Reservoir and month	Number anglers checked			Total hours fished	Total catch			Fish Der	
	Resident	Nonresident	Total		Rainbow	Cutthroat	Total	Angler	Hour
<u>Windor Reservoir</u>									
May	8	6	14	80	9	-	9	0.64	0.11
<u>Wi regrass Reservoir</u>									
May	99	-	99	260	204	-	204	2.06	0.79

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JOB PERFORMANCE REPORT

STATE: Idaho NAME: REGIONAL FISHERIES MANAGEMENT INVESTIGATIONS
PROJECT NO. : F-71-R-9 TITLE: Blackfoot River, Portneuf
JOB NO. : V-c River, Regional Waters
PERIOD COVERED: 1 January 1984 - 31 December 1984

ABSTRACT

On 1 July 1984, the opening of the upper Blackfoot River, we checked 280 anglers. They had fished 1,180 hours and harvested 328 wild cutthroat and 64 eastern brook trout. This was the lowest catch per angler and catch per hour for a 13-year period. This low catch rate occurred because of extremely high river flows and a decline in cutthroat numbers. Sixty-five percent of the anglers contacted responded that they were satisfied with the fishing while 35 percent were not.

High water flows in the Portneuf River precluded making a population estimate at the Inkom-McCammon electrofishing location in 1984. As has occurred in the past, yearly population estimates at the other two sites electrofished varied considerably. It now appears that this variation is due probably more to sampling error than actual changes in trout numbers.

Evaluation of multiple electroshocked fish indicated it probably had no relation to the catchability of trout at the Inkom-McCammon and the Steel Bridge-Utah Bridge stations. At the Lava Hot Springs station, multiple electroshock affected trout catchability as in every case there were more trout captured on the first pass than on the second pass.

Author:

John T. Helmer
Fisheries Manager

OBJECTIVES

Gather information on the harvest of cutthroat from the upper Blackfoot River and tributaries.

Gather information on trout populations in selected sections of the Portneuf.

Gather information on electrofishing techniques by comparing estimates of trout using different methods.

UPPER BLACKFOOT RIVER AND TRIBUTARIES

Techniques

Creel Census

On 1 July, the upper Blackfoot River and tributaries open to fishing. Annually on this date we operate a check station at the Junction of the Blackfoot River and Slug Creek roads to assess fishing pressure and catch.

Angler Questionnaire

Anglers fishing the upper Blackfoot River and tributaries on 1 July 1984 were asked the following questions:

1. Are you satisfied with fishing in general in the upper Blackfoot River?
Yes _____ No _____

2. Are you satisfied with the present fishing on the upper Blackfoot River in terms of:
Size of Fish? Yes _____ No _____ No opinion _____
Abundance of Fish? _____

3. How many times per year do you fish the upper Blackfoot?
0-5 _____ 6-15 _____ 16+ _____

4. How many years have you fished the upper Blackfoot?
0-5 _____ 6-15 _____ 16+ _____

5. How would you rate fishing now as compared to the year you started?
Better _____ Same _____ Worse _____

6. If changes in the present management and regulations are needed, which of the following would you favor, oppose or have no opinion on?
Favor _____ Oppose _____ No opinion _____
Shorter seasons
Reduced bag limit
Length restriction
Bait restriction
Catch-and-release regulation

Results

Creel Census

On 6 June 1984, the opening day of a lower section of the upper Blackfoot River, we operated the Trail Check Station. We checked 22 anglers who had fished 67 hours and caught 39 wild cutthroat, 2 wild rainbow and 1 hatchery rainbow. They averaged 1.91 fish per angler and 0.63 fish per hour. This compares to 0.90 fish per angler and 0.21 fish per hour in 1983 and 1.04 fish per angler and 0.22 fish per hour in 1982.

On 1 July 1984 (the opening of the upper Blackfoot River), we checked 280 anglers (224 residents and 56 nonresidents) after they had completed fishing. One-hundred seventeen (52 percent) were from Caribou County, 43 (19 percent) were from Franklin County, 39 (17 percent) were from Bannock County, 13 (6 percent) were from Bear Lake County and 12 (5 percent) from other Idaho counties. In addition, 46 anglers (16 percent) were residents of Utah and 10 (4 percent) were residents of other states.

The 280 anglers checked fished 1,180 hours and killed 328 wild cutthroat and 64 eastern brook trout. Catch per angler for trout killed was 1.40 and fish per hour was 0.33 (Table 20). On that same date, anglers reported catching and releasing 290 trout because of their small size. However, this may be somewhat subjective depending on their memory. This is the lowest catch per angler and catch per hour for a 13-year period. This probably occurred because some of the highest river flows on record occurred during the spring of 1984. In addition, it appears that an actual decline in cutthroat numbers has occurred in the river.

The mean total length of 349 wild cutthroat taken by anglers on 1 July 1984 from the upper Blackfoot River and tributaries was 330 mm (Table 21). This compares with a high during the period 1972 through 1984 of 412 mm in 1982 and a low of 280 mm in 1972. Forty-one percent of the wild cutthroat exceeded 329 mm in total length while 21 percent exceeded 431 mm. The mean weight of 93 cutthroat taken from the upper Blackfoot River and tributaries on 1 July 1984 was 492 g.

Angler Questionnaire

To obtain questionnaire information, we contacted 93 anglers fishing Blackfoot River and tributaries. Sixty (65 percent) responded that they were satisfied with the fishing and 33 (35 percent) not satisfied. Forty-nine anglers (60 percent) responded that they were satisfied with the size of fish, 26 (32 percent) responded that they were not happy with the size of the fish and 7 (8 percent) had no opinion. Forty-five anglers (48 percent) responded that they were satisfied with the abundance of fish, 40 anglers (43 percent) were not satisfied with the abundance and 8 (9 percent) had no opinion. Sixty anglers (65 percent) said they fished the upper Blackfoot River and tributaries 0-5 times per year, 11 (12 percent) said they fished it 6 to 15 times per year and 21 (23 percent) said they fished it 16 or more

Table 20. Catch rates of anglers fishing the upper Blackfoot River and tributaries on 1 July.

Year	Anglers		Fish harvested			Fish harvested per		Number trout released	Overall fish per	
	checked	Hours fished	Cutthroat	Brook	Total	Angler	Hour		Angler	Hour
1972	415	1,361	1,498	9	1,507	3.63	1.11	-	-	-
1973	316	864	886	83	968	3.06	1.12	-	-	-
1974	415	1,323	1,064	68	1,132	2.73	0.86	-	-	-
1975	566	1,777	843	42	885	1.56	0.50	-	-	-
1976	331	1,345	1,068	41	1,109	3.35	0.83	-	-	-
1977	232	575	470	43	513	2.21	0.89	-	-	-
1978	385	1,276	743	40	783	2.03	0.61	-	-	-
1979	417	1,453	746	153	899	2.16	0.62	-	-	-
1980	380	1,455	645	87	732	1.93	0.50	-	-	-
1981	206	791	397	69	486	2.26	0.59	821	6.25	1.63
1982	172	577	220	26	248	1.43	0.43	234	2.79	0.83
1983	149	542	226	13	239	1.60	0.44	212	3.02	0.83
1984	280	1,180	328	64	392	1.40	0.33	290	2.44	0.58

Table 21. Comparative sizes of wild cutthroat caught from the upper Blackfoot River and tributaries upstream from the Slug Creek Bridge.

Date	Number cutthroat	Maximum size	Percent exceeding		Mean total length
			400mm	500mm	
1 July 1972	253	584	-	-	280mm
1 July 1973	223	559	-	-	300mm
1 July 1974	310	554	-	-	300mm
1 July 1975	289	-	-	-	325mm
1 July 1977	277	-	-	-	284mm
1, 2, 4 July 1978	904	560	25	4	32mm
1, 4 July 1979	692	560	23	5	314mm
1, 4 July 1980	653	550	41	8	359mm
1 July 1981	79	-	-	-	283mm
1 July 1982	165	-	66	30	41 2mm
1 July 1983	168	-	-	-	378mm
1 July 1984	349	596	27	7	330mm

times per year. When anglers were asked how many years they had fished the upper Blackfoot River and tributaries, 40 (42 percent) said 0-5 times, 25 (26 percent) said 6-15 years and 31 (32 percent) said 16 or more. When anglers were asked as to how they would rate fishing now as compared to the year they started, 5 (6 percent) said better, 28 (32 percent) said the same and 55 (62 percent) said worse.

Discussion

The overall trend in the Blackfoot River cutthroat fishing appears downward over the past 25-year period. This is evidenced by lower river cutthroat catch rates. Thurow (1981) compared the numbers of adult spawners in tributaries to that found by Cuplin (1961). They were three times more abundant in 1959 when compared to the 1978-1980 period. The total mortality rate for age V+ cutthroat was 0.56 in 1959 and 0.69 in 1978. The catch exceeding 500 mm was 20 percent in 1959 and 4 percent in 1978. Thus, most comparisons over time indicated that cutthroat numbers were decreasing both in numbers and size.

Recommendations

After collecting angler questionnaire preference information and holding public meetings to obtain input, we recommended a three-trout limit (only 2 over 16 inches) with a July 1 opening from the Highway 34 bridge upstream. This was incorporated in our 1985 fishing regulations.

PORTNEUF RIVER

Techniques

In 1979 we started a project to annually estimate trout numbers in three sections of the Portneuf River. From 1979 through 1983 we made mark-and-recapture estimates at each section. We electrofished each, capturing and marking as many trout as possible on the first pass. A recapture pass was made a few days later and a population estimate calculated using modified Peterson estimators. Because a high amount of year to year variability occurred at each site between population estimates, in 1984 we doubled our electrofishing effort at two of these sites to determine if this variation was due to sampling error.

Results

Inkom-McCammon

On 11 July 1984 we electrofished the Inkom-McCammon section and captured six brown trout and one cutthroat. On 22 October we electrofished the same area again and captured only two brown trout. This compares to an average of 44 trout captured on the first pass for the previous five years. We did not attempt a second pass after either date because of the small number of trout captured on the first pass. Consequently, a 1984 population estimate was not made. Extremely high water in this area in 1984 resulted in the low electrofishing efficiency.

Lava Hot Springs

We made four different mark and recapture runs at the Lava Hot Springs electrofishing section (Table 22). A modified Peterson estimate using the data collected on 10 and 12 July 1984 yielded 488 trout and one using information collected on 16 and 18 July 1984 yielded 769 trout (Table 23). These two estimates were made using the same techniques as in the past. We also calculated a trout population in this area using the modified Schnabel method and information collected on all four runs. This estimate yielded 818 trout. This is the most precise of the three estimates.

The 153 wild rainbow captured during the sampling near Lava Hot Springs had a mean total length of 280 mm and a standard deviation of 49 mm. From the standpoint of length frequency, 94 percent were greater than 200 mm, and 31 percent were greater than 300 mm and 3 percent greater than 400 mm. The fish had a mean weight of 229 g and a standard deviation of 158 g.

Steel Bridge-Utah Bridge

We made four different mark and recapture passes in the upper Portneuf River in the section between the Steel Bridge and Utah Bridge (Table 24). A modified Peterson estimate for the first two days (9 and 12 October) yielded 878 trout. I did not make an estimate for the last

Table 22, Number of trout captured from 1979 through 1984 in an approximate five kilometer section of the Portneuf River from the Center Street Bridge in Lava Hot Springs downstream to the concrete Highway 30 Bridge at Milepost 369.

Dates	Trout captured and marked first pass				Trout captured second case							
	Wild	Hatchery	Brown	Cutthroat	Unmarked	Marked	Unmarked	Marked	Unmarked	Marked	Unmarked	
	rainbow	rainbow			wild	wild	hatchery	hatchery				brown
<u>1979</u>												
8/30 & 8/31	113	—	8	—	75	7	—	—	10	—	—	
<u>1980</u>												
8/26 & 8/27	64	—	3	—	47	3	—	—	1	—	2	
<u>1981</u>												
8/5 & 8/6	86	14	4	—	44	—	2	1	2	—	—	
10/8 & 10/6	290	9	14	1	135	18	—	—	6	1	—	
<u>1982</u>												
7/12 & 7/13	64	—	—	—	35	3	—	—	4	—	1	
<u>1983</u>												
7/28 & 7/28	114	—	3	3	96	3	1	—	3	—	1	
<u>1984</u>												
7/10 & 7/12	52	—	4	6	27	3	—	—	—	—	3	
7/16 & 7/18	48	1	2	1	26	1	—	—	1	—	2	

Table 23 . Trout population estimate from 1979 through 1984 in a section of the Portneuf River from the Center Street Bridge in Lava Hot Springs downstream to the Highway 30 Bridge at Milepost 369.

Year	Wild rainbow	Hatchery rainbow	Brown	Cutthroat	Total	95 percent C. I.
1979	1,290	-	128	-	1,418	514 - 2312
1980	872	-	28	18	918	34 - 1802
1981	2,369	50	112	5	2,536	1475 - 3597
1982	681	-	27	7	715	33 - 1397
1983	3,017	-	95	64	-	62 - 6290
1984						
7/10 and 7/12	420	-	19	49	488	30 - 946
7/16 and 7/18	707	8	23	31	769	0 - 2235

Table 24. Number of trout captured from 1979 through 1984 in an approximate 2.20 kilometer section of the upper Portneuf River from the Steel Bridge downstream to the Utah Bridge.

Date	Trout captured and marked first pass				Trout captured second pass					
	Wild rainbow	Hatchery rainbow	Cutthroat	Hybrid	Unmarked wild rainbow	Marked wild rainbow	Unmarked hatchery rainbow	Marked hatchery rainbow	Unmarked cutthroat	Marked cutthroat
<u>1979</u>										
9/16 & 9/27	87	3	14	1	38	18	6	-	-	-
<u>1980</u>										
9/26 & 9/29	145	27	42	-	144	40	20	10	20	10
<u>1981</u>										
9/14 & 9/16	43	30	5	-	53	19	32	9	5	-
<u>1982</u>										
9/15 & 1/16	54	12	10	-	33	6	7	-	10	-
<u>1983</u>										
9/21 & 9/23	74	33	14	-	84	12	25	7	13	1
<u>1984</u>										
10/9 & 10/12	81	17	31	-	57	10	10	3	25	2
10/16 & 10/18	34	13	15	-	11	-	4	-	6	-

Table 25. Trout population estimate from 1979 through 1984 in a section of the upper Portneuf River from the Steel Bridge downstream to the Utah Bridge.

Year	Wild rainbow	Hatchery rainbow	Cutthroat	Hybrid	Total	95 percent C. I.
1979	308	47	22	2	379	237-521
1980	624	104	139	-	867	674-1,060
1981	185	120	19	-	324	219-429
1982	432	95	100	-	627	183-1,071
1983	540	200	91	-	831	497-1,165
1984						
10/9 and 10/ 12	553	105	220	-	878	472-1,284
10/16 and 10/18						

two days as we did not get any recaptures. I also estimated the trout population in this area using the modified Schnabel method and information collected on all four runs. This estimate yielded 1,110 trout.

The 188 different wild rainbow captured in the upper Portneuf River during the sampling had a mean total length of 312 mm and a standard deviation of 101 mm. From the standpoint of length frequency 82 percent were greater than 200 mm, 54 percent were greater than 300 mm and 24 percent were greater than 400 mm. The fish had a mean weight of 390 g and a standard deviation of 294 g. The mean total length of 77 cutthroat in this area was 270 mm and their mean weight was 234 g.

Avoidance Factor

Both Yundt (1983) and Peterson and Cederholm (1984) reported on changes in catchability of salmonids as related to multiple electroshock. Yundt discussed the differences in catchability as related to the length of time between mark and recapture runs. He reported that estimates made with 0 to 3 days between mark and recapture passes averaged 75.1 percent and 54.0 percent for trout, respectively, of population estimates made 5 to 10 days between mark and recapture passes. Peterson and Cederholm reported that the catchability of Juvenile coho salmon between exposures to current did not equalize even after 24 hours.

Comparisons of the number of trout captured on the first vs. the second pass at the Inkom-McCammon station are shown in Table 26. In 1982 and 1983 there were more trout captured on the first pass than the second. In 1981 and 1983 there were more trout captured on the second pass. In 1982 the trend was stable. At this location it appears that the length of time between mark and recapture passes does not effect the catchability of trout, thus multiple electroshock has no effect on catchability. Brown trout are the predominate game fish species in the area.

Comparisons of catchability at the Lava Hot Springs station indicate that a definite downward trend occurs between the number of fish captured on the first pass vs. the second pass (Table 27). Thus, in this area there appears to be a definite avoidance to multiple electroshock. This avoidance would bias the population estimates made at this location. Consequently, sampling error may be a big factor in the unexplained year-to-year variability in trout numbers here. Wild rainbow are the predominate game fish species in this area.

The catchability of trout at the Steel Bridge-Utah Bridge station in regards to multiple electroshock is shown in Table 28. At this location the number of trout captured was down on the second pass vs. the first pass on four occasions and up on three occasions. Thus, the catchability of trout didn't seem to be affected by multiple electroshock here nearly as much as at the Lava Hot Springs station. Consequently population estimates may be more accurate even though a lot of year-to-year variation occurs.

Table 26. Catchability of trout in relation to multiple electroshock at the Inkom-McCammon station.

Year	Days between mark and recapture passes	Trout captured first pass	Trout captured second pass	First -to second pass pass trend
1979	2	63	47	Down
1980	2	39	34	Down
1981	3	43	72	Up
1982	4	50	49	Stable
1983	3	23	56	Up

Table 27. Catchability of trout in relation to multiple electroshock at the Lava Hot Springs station.

Year	Days between mark and recapture passes	Trout captured first pass	Trout captured second pass	First to second pass trend
1979	12	105	62	Down
1980	4	214	234	Up
1981	3	78	118	Up
1982	2	76	56	Down
1983	3	121	142	Up
1984	4	129	107	Down
1984	3	62	21	Down

Table 28. Catchability of trout in relation to multiple electroshock at the Steel Bridge-Utah Bridge station.

Year	Days between mark and recapture passes	Trout captured first pass	Trout captured second pass	First to second pass trend
1979	12	105	62	Down
1980	4	214	234	Up
1981	3	78	118	Up
1982	2	76	56	Down
1983	3	121	142	Up
1984	4	129	107	Down
1984	3	62	21	Dawn

Discussion

It appears that sampling error may have caused some of the year-to-year variations. Annual estimates at each location varied widely. It also appears that the multiple electroshock avoidance factor in relation to days between mark and recapture runs may not be too significant.

Until 1984, two mark and recapture runs were made at each location to obtain population estimates. To obtain better estimates, four mark and recapture runs should be made with a minimum of five days between each pass. However, the number of days between passes does not seem as critical as the number of passes.

Creel Census - Streams

Popular Region 5 fishing streams where we collected a considerable amount of creel census information in 1984 are listed in Table 29.

Table 29. Anglers interviewed, hours fished and catch from various streams in Region 5 during 1984.

Reservoir & month	Analers checked			Hours fished	Total catch			Fish per	
	Resident	Nonresident	Total		Rainbow	Cutthroat	Total	Analer	Hour
<u>Bear River</u>									
January	14	13	27	84	53	—	53	1.96	0.63
<u>Blackfoot River Below Dam</u>									
March	4	—	4	4	12	4	16	4.00	4.00
May	101	5	106	313	40	2	42	0.40	0.23
June	81	15	96	324	53	7	60	0.63	0.19
July	38	3	41	89	30	—	30	0.73	0.34
August	32	2	34	11	31	7	38	1.12	0.34
October	—	<u>6</u>	<u>6</u>	<u>18</u>	<u>2</u>	<u>13</u>	<u>15</u>	<u>2.50</u>	<u>0.83</u>
Total	256	31	287	855	168	33	201	0.70	0.21

Table 29. Continued.

Reservoir & month	Anglers checked		Total	Hours fished	Total catch			Total	Fish Per	
	Resident	Nonresident			Rainbow	Cutthroat	Eastern Brook		Angler	Hour
<u>Brush Creek</u>										
June	4	—	4	8	—	—	—	—	0.00	0.00
July	8	—	8	16	2	13	—	15	1.88	0.94
August	15	—	13	35	1	4	—	5	0.38	0.14
Total	25	—	25	59	3	17	—	20	0.80	0.34
<u>Cottonwood Creek</u>										
June	9	3	12	34	—	39	—	39	3.25	1.15
<u>Twenty-four Mile Creek</u>										
May	15	—	15	22	4	—	—	4	0.27	0.18
June	7	—	7	28	18	—	—	18	2.57	0.64
July	24	21	45	90	50	—	—	50	1.11	0.56
September									8.50	1.70
Total	48	21	69	150	89	—	—	89	1.29	0.59
<u>Eight Mile Creek</u>										
July	2	—	2	1	—	—	2	2	1.00	2.00
August			8	14	14	—	10	3	1.71	
Total	8	2	10	15	14	—	12	26	2.60	1.73

Table 29. Continued.

Reservoir & month	Anglers checked			Hours fished	Total catch			Fish per	
	Resident	Nonresident	Total		Rainbow	Cutthroat	Total	Angler	Hour
Pebble Creek Reservoir									
May	3	—	3	2	—	—	—	0.00	0.00
July			12	23	17	1	18	1.38	0.7
Total	16	—	16	25	17	1	18	1.13	0.72
Rawlins Creek									
July	9	—	9	21	15	12	27	3.00	1.29
August	3		3	2	8		8	2	3.00
Total	12	—	12	23	21	12	33	2.75	1.44
Snake River									
May	51	1	52	241	41	—	41	0.79	0.17
August	25	1	26	65	6	2	8	0.31	0.12
September	4	—	4	7	8	—	8	2.00	1.14
November	7	=	1	14	1			%1	0.10
Total	87	2	89	323	56	2	58	0.65	0.18
Stump Creek									
July	7	—	7	26	—	12	12	1.71	0.46
August			2	2	=	1	1	0.50	0.50
Total	7	2	9	28	—	13	13	1.44	0.46
Tincup Creek									
July	8	2	10	12	—	10	10	1.00	0.83

JOB PERFORMANCE REPORT

STATE: Idaho NAME: REGIONAL FISHERIES MANAGEMENT
INVESTIGATIONS
PROJECT NO.: F-71-R-9 TITLE: Region 5 Technical Guidance
JOB NO.: V-d

PERIOD COVERED: 1 January 1984 - 31 December 1984

ABSTRACT

I commented on 10 water right applications, 4 NPDES permits, 3 gold mining projects and 4 stream alteration projects in 1984. I also spent some time commenting on the Caribou National Forest Management Plan, the first one completed in draft form in Idaho. Some time was spent analyzing data, getting visual aides made and obtaining public input on proposals to change the Upper Blackfoot River fishing regulations. I also spent some time reviewing a number of different hydroelectric projects analyzing fish plants and at coordination meetings regarding Bear Lake.

Author:

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Regional Fisheries Manager

OBJECTIVES

To provide technical guidance to public and private individuals and agencies on matters pertaining to fisheries management in Region 5.

FINDINGS

Water Right Application

I commented on 10 water right applications in 1983. Most were to protest the granting of a water right for hydroelectric projects as is the Department's standard procedure. After obtaining more specific information on some of these projects, our protest was dropped.

Comments on Forest Projects

I spent some time reviewing and commenting on the Caribou National Forest Management Plan. I also commented on the upgrading of the McCoy Creek Road and a stream crossing problem on the Diamond Creek Road.

Mining Activities

I commented on three proposed gold mining projects in 1984. One was a fairly large project near McCoy Creek and the other, small dredge operations.

Stream Channel Alteration

I commented on four stream alterations in 1984. Generally, they involved culvert placement and had no significant effects on fish and wildlife populations.

National Pollutant Discharge Elimination System Permit

I commented on four NPDES permits. They involved improving the quality of the discharge water to the receiving stream.

Fishing Regulations

I spent some time developing recommendations for the 1985 fishing regulations. This entailed reviewing historical data, developing catch estimates under different regulatory options, getting visuals for presentations made and obtaining public input on the possible options.

Hydropower Licensing

I reviewed and commented on a number of different hydroelectric projects in 1984. Specifically, seven different projects were reviewed regarding fish and wildlife input. Often the various projects required a site visitation and discussions with the developer.

Letters - Regional Fishing

I wrote ten letters regarding fishing opportunity in Region 5 waters. I also wrote five letters to anglers thanking them for returning fish tags.

Regional Fish Plants

I spent some time reviewing fish plants made by the different hatcheries in the region. These plants were also reviewed with both enforcement and hatchery personnel.

Bear Lake

Two days were spent in coordination meetings with personnel from the Utah Department of Natural Resources regarding our cooperative Bear Lake Cutthroat Project. In addition, I spent two days at meeting coordinated by the Bear Lake Regional Commission where topics discussed included the water quality of Bear Lake, a hydropower production vs. snowpack model and a fisheries composition study of Dingle Marsh.

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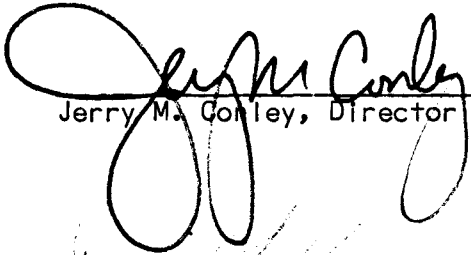
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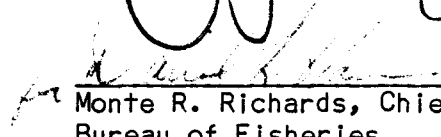
John T. Heimer
Regional Fisheries Manager

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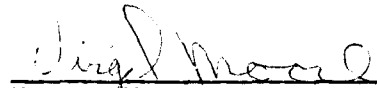
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Board of Fisheries and Game: Actions & Activities. Alaska Fish and Wildlife News (Magazine). Management & Research. Fish & Shellfish. Alaska Board of Game and Board of Fisheries Hold Meetings to Discuss Board Meeting Schedules. State Disappointed by Vast Critical Habitat Proposed for Ringed and Bearded Seals. ADF&G COVID-19 Safety Protocols. The first California fish and game act was passed in 1852 by the California State Legislature and signed into law by Governor John Bigler. The Game Act placed closed seasons on 12 counties for quails, partridges, mallards and wood duck, elk, deer, and antelope. Two years later in 1854, the Legislature extended the act to include all counties of California. In 1860, protection controls were extended for trout. In 1909, the Board was reorganized into the California Department of Fish and Game. Regional divisions. The Department of Fish and Game divides the State of California into seven management regions, whose boundaries (with the exception of Sacramento, Yolo and San Joaquin counties) mostly correspond to county borders. Followers of the Alaska Department of Fish and Game main Facebook page may also enjoy regional Facebook pages that offer insights more focused on specific areas. These are: ADF&G - Southeast Alaska <https://www.facebook.com/adfgseak/> ADF&G Wildlife Conservation - Northwest Alaska - Region V <https://www.facebook.com/ADFGWildlifeNorthwestAlaska/> Pike are a popular sport fish and also an unwanted invasive predator in some waters. How is that? Kristine Dunker offers a look at these barracuda-like freshwater fish, where they do and don't belong. <http://wildlifeneeds.alaska.gov>. See All. See More.