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ANNUAL REPORT
TRINITY RIVER SALMON AND STEELHEAD HATCHERY
1972-73

by

Gerald W. Bedell
Region 1, Inland Fisheries

Anadromous Fisheries Branch
Administrative Report No. 74-4

1974

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ABSTRACT

This report describes the operation of Trinity River Salmon and Steelhead Hatchery for the period July 1, 1972 through June 30, 1973. King salmon (Oncorhynchus tshawytscha), silver salmon (O. kisutch), steelhead (Salmo gairdnerii gairdnerii) and sea-run brown trout (S. trutta) were reared.

Tables present the numbers of adults spawned and eggs and fish produced and planted. The appendix presents the numbers of eggs and fish shipped and received, and daily weather, water temperature, and fish trapping data for the fiscal year.

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INTRODUCTION

This is the fifteenth consecutive fiscal year report covering operation of the Trinity River Salmon and Steelhead Hatchery, located near Lewiston, Trinity County. The hatchery was constructed by the United States Bureau of Reclamation to compensate for spawning areas blocked by the Trinity River project. The California Department of Fish and Game began operation of the permanent installation on May 15, 1963. Operation and maintenance costs are paid by the Bureau.

This report describes operation of the hatchery from July 1, 1972 through June 30, 1973. Copies of previous annual reports are available upon request from the Anadromous Fisheries Branch, Sacramento.

BUDGET

The estimated hatchery operating budget for fiscal year 1972-73 was \$263,742.00.

Total - Salary and Wages	\$120,620.00
Fish food	83,000.00
General expense	3,300.00
Chemicals	3,000.00
Nets and Seines	300.00
Telephone	500.00
Postage	100.00
Travel, instate	2,400.00
Recurring maintenance of facility	10,000.00
Vehicle operation, automobile	6,180.00
Rental of refrigeration unit	3,600.00
Equipment, misc. replacement	200.00
Equipment, misc. additional	200.00
Subtotal	233,400.00
Administrative charges	30,342.00
TOTAL	263,742.00

Due to the adjustment in Salary and Wages, Fish food, and Administrative charges, actual expenditures amounted to \$255,723.00

PRODUCTION SUMMARY

King salmon entered the hatchery from August 30 through November 13. Silver salmon began entering the hatchery October 12. The run ended December 11. Steelhead were trapped at the hatchery from October 30 until April 19. A few brown trout entered the hatchery between October 16 and November 30.

Production data are as follows:

Species	Number trapped	Number females spawned	Eggs taken or received	Number fingerlings planted or transferred	Yearlings or broodstock planted or transferred	Total kg planted	On hand June 30, 1973
King salmon	11,381	3,456	10,616,000	5,775,210	1,302,029	64,593	1,200,000
Silver salmon	2,670	25	51,000	0	9,829	379	42,000
Steelhead							
1973 BY	271	527a/	1,534,000b/	0	0	0	896,000c/
1972 BY				101,376	581,444	23,406	4,000
1969-70 BY					1,498	1,526	0
Brown trout							
1972 BY	111	43	73,000d/	0	0	0	50,000
1971 BY					30,220	921	0
1969 BY					2,321	1,625	0
TOTALS	14,433	4,051	12,274,000	5,876,586	1,927,341	92,450	2,192,000

- a/ Includes 152 Trinity River brood stock and 288 Eel River brood stock.
- b/ Includes 146,000 shipped to Mad River Hatchery.
- c/ Includes 130,848 Washougal strain (summer-run) fingerlings received from Moccasin Creek Hatchery.
- d/ Includes 20,544 shipped to Mt. Shasta Hatchery.

HATCHERY OPERATION

No major disease problems occurred at Trinity River Hatchery during fiscal year 1972-73. This contrasted with 1971-72, when over 40% of all king salmon eggs taken were lost to white spot disease. White spot did occur in isolated instances this year, but mortalities were negligible. Losses were confined to a few incubator trays which suggested that a few individual fish were responsible.

The only other disease problem encountered during the year was a small outbreak of tail rot among spring-run king salmon fingerlings. Regular treatments with copper sulfate and malachite green controlled this disease.

Predation by mink, racoons, gulls, kingfishers, and especially great blue herons, accounted for unknown but probably substantial losses of juvenile salmon and steelhead from raceway ponds.

All production fish were reared on a diet of Oregon Moist Pellet (OMP). Brood fish were started on OMP and then changed to dry brood stock pellets during the last 4 to 6 months before spawning. A total of 207,002 kg (456,600 lb) of feed produced 92,329 kg (203,389 lb) of fish during fiscal year 1972-73. The feed conversion rate (kg of feed required to produce 1 kg of fish) was 2.24.

One of the coldest periods in many years occurred in northern California during December. Air temperatures at the hatchery dropped to -18.3 C (-1 F); water temperatures declined to 3.6 C (38.5 F), and growth of fish in the raceways virtually stopped. Some pipes and valves were broken, but damage was minor.

Hatchery maintenance projects completed during the year included painting the fish feed bins and resurfacing the roadways adjacent to the lower pond series. Contractors did both jobs. Hatchery employees began converting a second stack of incubators to a heating-recirculating system. Hopefully, this will be completed before the 1973 salmon spawning season.

Hatchery personnel hauled approximately 34,500 kg (76,000 lb) of salmon carcasses to Redding and transferred them to Butte Tallow Works' trucks for delivery to a reduction plant south of Chico.

The hatchery had 18,201 visitors in 1972-73. An additional 4,817 anglers used the river adjacent to the hatchery during the fly fishing only season from the Saturday preceding May 30 to September 15. Guided tours were provided for several of the larger groups of visitors, most of which were from schools in the area.

MARKING PROGRAMS

No fish were marked at Trinity River Hatchery during fiscal year 1972-73. Returning marked fish from previous years are listed in the sections for each species.

KING SALMON MAINTENANCE PROGRAM

History of the 1972 Run

The 11,381 king salmon trapped at the hatchery during this report period set an alltime record--due primarily to a very large number of spring-run fish. The first of these salmon was observed in the large stilling basin below the Lewiston Dam spillway May 20. Salmon arrived daily until there were an estimated 4,000 to 7,000 adult fish in the area from Lewiston Dam to the weir 1.6 km (1 mile) downstream.

The ladder was opened on August 30, and the surge of fish which then ascended filled the holding ponds to capacity by August 31. At this point, many of the fish, mostly males, were tagged with yellow Floy tags and returned to the river. Of the approximately 2,700 fish tagged and released, less than 20% returned to the trap. Many of them headed back downstream and anglers reported catching tagged fish as far downstream as Junction City.

Spring run

Between August 30 and October 8, 7,791 king salmon, thought to be mostly spring-run, were trapped. This number included 3,253 males, 4,424 females, and 114 grilse. A total of 2,185 females was spawned. They produced 6,613,000 eggs, an average of 3,027/female. The eggs averaged 281/100 ml (83/ounce). A sample of 250 adult spring-run fish, males and females, averaged 76 cm (29.9 inches) FL.

Fall run

A total of 3,590 king salmon was trapped from October 9 to November 13: 1,964 large males, 1,401 females, and 225 grilse. All were assumed to be fall-run.

There were 1,271 fall-run females spawned. They produced 4,003,000 eggs, an average of 3,149/female. Egg size averaged 284/100 ml (84/ounce). A sample of 100 fall-run fish, males and females, averaged 71 cm (28.1 inches) FL.

Marked King Salmon Returns

During the 1972-73 season, 1,290 marked king salmon were trapped. Six different marks were represented as follows:

Mark	Brood year	Date	Release data			Recovery data	
			Release site	Number	Average weight (g)	Number	Mean fork length (cm)
Ad	1966	3/19/68	Trinity Hatchery	52,185	42	11	73
LV	1967	12/ 3/68	"	100,000	27	7	82
RV	1967	4/10/69	"	100,000	67	21	80
Ad-LP	1968	10/15/69	"	200,000	33	1,248	72
LP	?	?	?	?	?	2	80
RP	?	?	?	?	?	1	79

Planting 1971 Brood Year King Salmon

A total of 1,302,029 1971 brood year king salmon was planted this fiscal year as yearlings. None were marked (see following table).

Date	Number	Release site	Average weight (g)
October 1972	135,165	Spring run	32
October 1972	700,009	Fall run	27
March 1973	121,675	Spring run	76
March 1973	345,180	Fall run	30
TOTAL			1,302,029

A total of 4,304,720 1971 brood year king salmon had been planted last fiscal year as fingerlings. Of the 10,556,000 king salmon (fall- and spring-run) eggs taken in 1971, 5,606,749 (53%) were eventually planted.

1972 Brood Year King Salmon Planted and Transferred

On March 23, 1973, 9,920 king salmon fingerlings averaging 0.5 g in weight (922/lb) were transferred to Feather River Hatchery. These fish were used in connection with a series of virus tests being conducted at that facility.

From May 21-25, 1973, 930,900 spring-run salmon averaging 4.7 g in weight (97/lb) were planted in the South Fork Trinity between its confluence with the East Fork and Forest Glen.

An additional 4,834,390 fingerlings were planted in the Trinity below the weir located 1.6 km (1 mile) downstream from the hatchery as follows:

Date	Average weight (g)	Number
5/29/73 Spring run	4.8	893,000
5/30/73	4.7	591,700
5/31/73	4.2	909,500
6/1/73	4.9	588,800
6/4/73	4.7	606,250
6/8/73	4.7	76,800
6/11/73	4.7	230,400
6/15/73-Fall run	3.6	596,900
6/19/73	2.7	341,040
TOTAL		4,834,390

Approximately 900,000 fall-run and 300,000 spring run fingerlings are being held at the hatchery for later release as yearlings.

SILVER SALMON MAINTENANCE PROGRAM

History of the 1972 Run

Silver salmon began entering the hatchery October 12. When the run ended December 11, 2,670 fish (28 males, 30 females, and 2,612 grilse) had been trapped. Twenty-five of the females were spawned. They produced 51,000 eggs (average: 2,040/female). The average egg size was 328/100 ml (97/ounce).

Marked Silver Salmon Returns

No marked silver salmon returned to Trinity River Hatchery during the 1972-73 season.

Planting 1971 Brood Year Silver Salmon

The 1971 brood year silver salmon yearlings, all Trinity River stock, were planted in the river near the hatchery as follows:

Date	Average weight (g)	Number
3/7/73	38	2,829

A total of 16,000 eggs had been taken from the 1971 run; thus egg-to-planting survival was 61%.

STEELHEAD MAINTENANCE PROGRAM

History of the 1972-73 Steelhead Run

Steelhead began entering the trap October 30. When the run ended April 19, 271 fish (160 males; 111 females) had been trapped. Eighty-seven females were spawned that produced 361,000 eggs, an average of 4,149/female. The average egg size was 667/100 ml (197/ounce). All resulting progeny are being held for release as yearlings.

Marked Steelhead Returns

Of the 271 steelhead trapped during 1972-73, 182 (67%) were marked. All had been released from Trinity River Hatchery. Those fish which were released at the hatchery returned at a rate of nearly 10 to 1 over those which were released downstream. Mark recoveries were as follows:

Mark	Brood year	Date	Release data			Recovery data	
			Release site	Number	Average weight (g)	Number	Mean fork length (cm)
D	1967	5/ 9/69	Hawkins Bar 97 km below hatchery	45,500	239	1	48.3
An-LV	1968	10/15/69	Hatchery	50,000	69	128	64.7
LV	1969	4/13/70	"	20,000	57	33	62.8
RV	1969	4/14/70	Pecwan	21,000	52	6	66.9
An-RV	1969	10/27/70	China Slide	50,000	162	14	67.6

Trinity River Strain Steelhead Brood Stock (Winter-run)

For the fourth consecutive year at Trinity River Hatchery, eggs were taken from winter-run Trinity River strain brood stock steelhead--fish from the 1970 brood year which had been held at the hatchery for this purpose. Of the approximately 400 females on hand, 152 matured and were spawned. They produced a total of 366,000 eggs, an average of 2,408/female. The average egg size was 805/100 ml (238/ounce). The fish spawned averaged 43 cm (17.0 inches) FL.

All resulting progeny (1973 brood year) are being held for yearling releases.

All winter-run brood stock on hand, spawned and unspawned, were planted at the end of the spawning season as follows:

Date	Average weight (kg)	Mark	Release site	Number
4/23/73	0.9	None	Hatchery to 24 km downstream	793

Eel River Strain Steelhead Brood Stock (Summer-run)

For the second successive year at Trinity River Hatchery, eggs were taken from Eel River strain summer-run steelhead brood stock. These brood fish were 1969 brood year progeny of steelhead trapped as adults in the main Eel River and brought to the hatchery in the summer of 1968. The original purpose in bringing the wild adults to the hatchery was to determine the feasibility of holding summer-run stock in a hatchery environment should future Eel River water development make it necessary.

Two hundred and eighty-eight females were spawned that produced a total of 807,000 eggs (2,802/female). The eggs averaged 788/100 ml (233/ounce). The fish spawned averaged 49 cm (19.3 inches)-FL.

A total of 146,000 of these eggs was shipped to Mad River Hatchery April 11, 1973.

All Del River summer-run brood stock on hand were planted at the end of the spawning season as follows:

Date	Average weight (kg)	Mark	Release site	Number
4/25/73	1.1	None	Hatchery to 24 km downstream	705

1973 Brood Year Summer-run Steelhead Received

A total of 130,848 Washougal River, Washington, strain steelhead fingerlings was received from Moccasin Creek Hatchery June 7, 1973. These fish will be held for yearling releases in the Trinity River.

Planting 1972 Brood Year Steelhead

Trinity River Strain (progeny of adults trapped during-1971-72 season)

The 1972 brood year Trinity River strain steelhead were planted as follows:

Date	Average weight (g)	Mark	Release site	Number
4/11/73	44	None	Hatchery	10,920
4/11/73	41	"	"	10,920
4/11/73	24	"	"	22,800
4/16/73	32	"	"	14,000
4/16/73	41	"	"	11,000
4/16/73	16	"	"	28,200
4/17/73	23	"	"	12,500
TOTAL				110,340

There are approximately 4,000 1972 brood year Trinity River strain steelhead being held at the hatchery for brood stock.

Of 262,000 1972 brood year Trinity River strain eggs taken, 114,340 (43.6%) were eventually planted or are on hand as brood stock.

Trinity River Brood Stock Strain

The 1972 brood year steelhead, Trinity River brood stock strain were planted, unmarked, at the hatchery, as follows:

Date	Size (g)	Number	Date	Size (g)	Number
3/ 6/73	65.8	25,025	4/ 9/73	51.6	8,800
3/ 6/73	81.1	26,880	4/ 9/73	45.4	10,000
3/ 7/73	70.9	5,824	4/ 9/73	50.4	9,000
3/27/73	69.8	5,200	4/10/73	35.2	14,835
4/ 4/73	63.9	9,940	4/10/73	48.3	9,400
4/ 4/73	69.8	3,900	4/10/73	47.3	19,200
4/ 4/73	78.3	1,740	4/10/73	28.4	16,000
4/ 4/73	31.5	10,800	4/11/73	46.3	9,800
4/ 5/73	48.3	9,400	4/11/73	49.3	9,200
4/ 5/73	54.0	8,400	4/11/73	41.2	7,975
4/ 5/73	43.7	7,280	4/11/73	26.1	13,485
4/ 6/73	28.4	9,600	4/12/73	37.8	12,000
4/ 6/73	32.4	19,320	4/12/73	29.5	15,400
4/ 6/73	49.3	5,520	4/13/73	29.9	15,200
4/ 6/73	63.9	4,970	4/13/73	30.3	15,000
4/ 6/73	52.8	26,015	4/13/73	22.7	40,000
4/ 6/73	48.3	7,050	4/16/73	22.5	16,160
4/ 6/73	34.9	3,900			
4/ 6/73	32.4	4,200			
4/ 6/73	54.0	8,400			
			TOTAL 3-6 to		
			4-16, 1973		444,819

Eel River Brood Stock Strain (Summer-run)

A total of 101,376 1972 brood year summer-run fingerlings was transferred to Mad River Hatchery July 6, 1972.

The rest were planted as follows:

Date	Average weight (g)	Mark	Release site	Number
4/18/73	15	None	Hatchery	9,300
4/18/73	38	"	"	11,800
4/19/73	37	"	"	5,185
			TOTAL	26,285

Of 249,000 1972 brood year Eel River strain eggs taken last season, 127,661 (51%) were later transferred to Mad River Hatchery or planted.

BROWN TROUT MAINTENANCE PROGRAM

History of the 1972 Brown Trout Run

Between October 16 and November 30 111 brown trout (57 males and 54 females) were trapped at the hatchery. Forty-three of the females were spawned, producing 73,000 eggs, an average of 1,698/female. Egg size averaged 930/100 ml (275/ounce).

A total of 20,544 of these eggs was shipped to Mount Shasta Hatchery January 11, 1973.

Planting 1969 Brood Year Brown Trout

All 1969 brood year brown trout left on hand were planted in the Trinity River as follows:

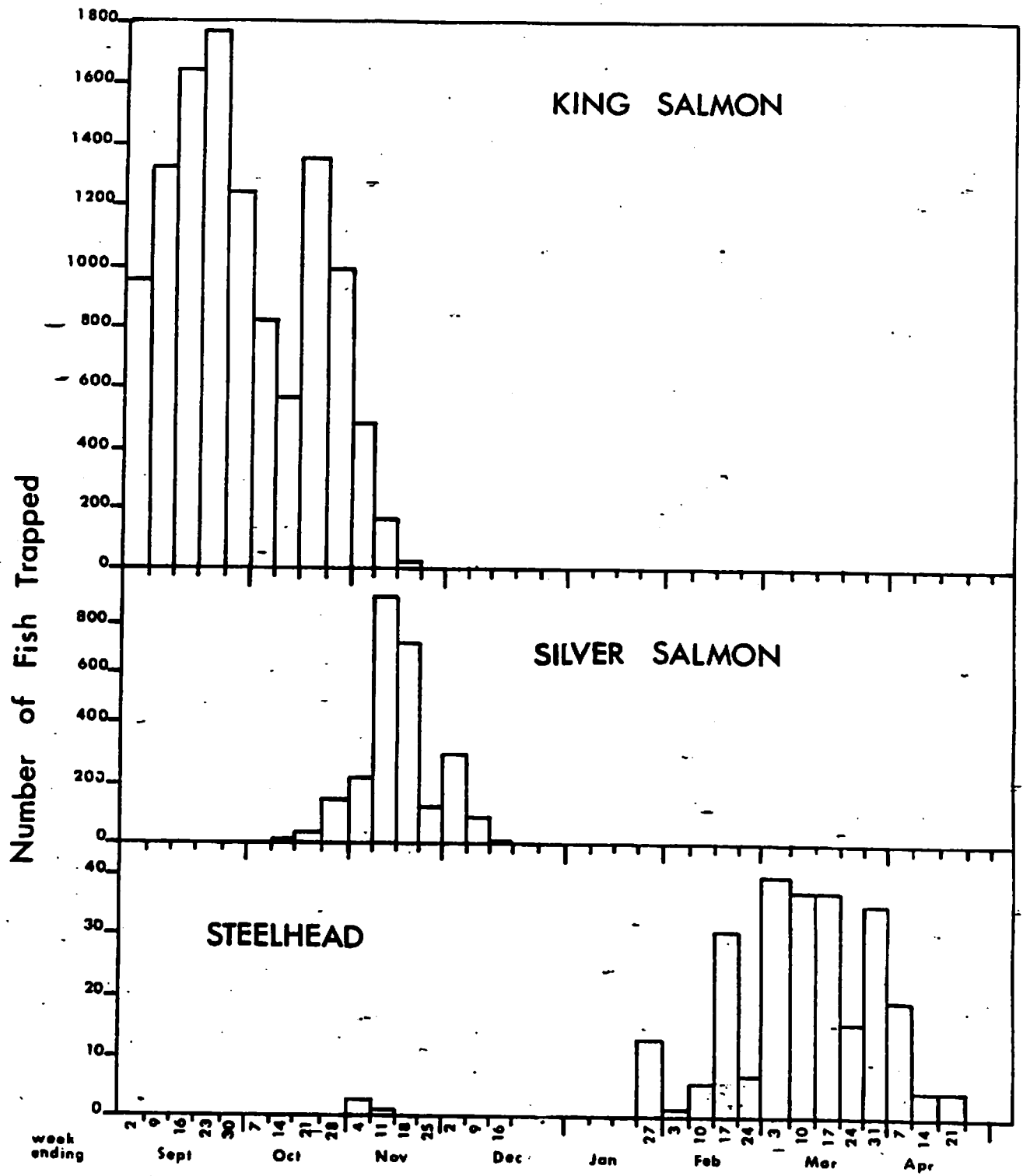
Date	Average weight (kg)	Mark	Release site	Number
11/13/72	0.7	None	Hatchery	634
11/15/72	0.7	"	"	<u>1,687</u>
			TOTAL	2,321

Planting 1971 Brood Year Brown Trout

The 1971 brood year brown trout were planted as follows:

Date	Average weight (g)	Mark	Release site	Number
4/17/73	35	None	Hatchery	9,750
4/17/73	26	"	"	<u>20,470</u>
			TOTAL	30,220

Of 140,793 brown trout eggs taken in 1971, 30,220 (22%) were eventually planted.



Appendix Figure 1. Weekly counts of salmon and steelhead trapped at Trinity River Hatchery during 1972-73 season.

Appendix Table 1

Eggs and Fish Shipped from and Received at
Trinity River Hatchery, July 1, 1972-June 30, 1973

Shipped	Number	Date	To
Steelhead fingerlings (1972 BY) summer-run, Eel River strain	101,376	7/ 6/72	Mad River Hatchery
Brown trout eggs (1973 BY)	20,544	1/11/73	Mount Shasta Hatchery
King salmon fingerlings (1972 BY)	9,920	3/23/73	Feather River Hatchery
Steelhead eggs (1973 BY) summer-run, Eel River strain	146,000	4/11/73	Mad River Hatchery

Received	Number	Date	From
Steelhead fingerlings (1973 BY) summer-run, Washougal strain	130,840	6/ 7/73	Moccasin Creek Hatchery

Appendix Table 2
Yearly Comparison of 1st Trapped at Lewiston
July 1, 1967 through June 30, 1973

Species	July 1, 1967 through June 30, 1968	July 1, 1968 through June 30, 1969	July 1, 1969 through June 30, 1970	July 1, 1970 through June 30, 1971	July 1, 1971 through June 30, 1972	July 1, 1972 through June 30, 1973
King Salmon						
Male	1,620	1,797	621	773	3,649	5,217
Female	1,250	2,102	832	725	4,645	5,825
Total Adults	2,870	3,899	1,456	1,498	8,293	11,042
Grilse	1,746	873	1,130	2,946	928	339
Totals	4,616	4,772	2,586	4,444	9,221	11,381
Silver Salmon						
Male	287	3	153	1,410	28	28
Female	519	1	132	1,396	11	30
Total Adults	806	4	285	2,806	39	58
Grilse	59	34	1,711	341	8	2,612
Totals	865	38	1,996	3,147	47	2,670
Steelhead trout						
Adults	232	554	241	67	242	271
Brown trout						
Adults	231	170	70	23	7	111

Appendix Table 3
Trinity River Salmon and Steelhead Hatchery
Weather, Water, and Fish Data Report
July 1, 1972, through June 30, 1973

July	Temperature (C*)				Weather	Flow of Trinity River at Lewiston (m ³ /sec**))	Fish trapped				
	Air		Water				King salmon		Silver salmon		Steelhead
	Maximum	Minimum	Maximum	Minimum			Adults	Grilse	Adults	Grilse	
1	41.1	13.3	11.1	10.0	clear	4.340					
2	37.2	15.6	11.1	10.0	clear	4.312					
3	38.3	12.8	11.7	10.6	clear	4.284					
4	36.1	13.3	11.4	9.7	clear	4.284					
5	33.9	11.7	11.1	10.0	clear	4.284					
6	32.2	11.1	11.4	10.0	clear	4.284					
7	33.3	8.3	11.7	10.0	clear	4.284					
8	31.1	8.9	10.6	10.0	clear	4.284					
9	30.0	11.7	10.6	10.3	cloudy	4.284					
10	33.3	8.3	11.1	10.0	clear	4.284					
11	36.7	10.6	11.1	10.0	clear	4.284					
12	39.4	13.3	10.8	10.0	clear	4.256					
13	41.1	11.1	11.4	10.0	clear	4.284					
14	42.2	14.4	11.1	10.0	clear	4.200					
15	46.7	14.4	12.2	10.6	clear	4.396					
16	41.1	15.6	12.2	10.6	clear	4.424					
17	41.1	16.1	12.2	10.0	clear	4.452					
18	33.3	15.6	11.9	10.0	clear	4.424					
19	30.6	10.0	11.4	10.3	cloudy	4.312					
20	30.0	11.7	11.7	10.3	cloudy	4.312					
21	31.1	11.1	11.1	10.3	cloudy	4.284					
22	33.3	11.1	11.1	10.3	cloudy	4.284					
23	32.2	10.6	11.1	10.3	cloudy	4.284					
24	31.7	10.0	11.7	10.3	clear	4.284					
25	32.2	8.9	11.4	10.3	clear	4.284					
26	33.3	10.0	11.9	10.3	clear	4.284					
27	37.8	10.0	11.4	10.0	clear	4.312					
28	38.9	10.6	11.1	10.0	clear	4.312					
29	30.0	14.4	10.6	10.0	light rain	7.028					
30	35.6	11.1	11.1	9.4	clear	5.012					
31	35.6	10.6	11.1	9.4	clear	4.200					

* Temperatures recorded in F, and later converted to C.

** Calculated equivalents of USGS records of flows in cfs.

August	Temperature (C*)				Weather	Flow of Trinity River at Lewiston (m ³ /sec**)	Fish trapped				
	Air		Water				King salmon		Silver salmon		Steelhead
	Maximum	Minimum	Maximum	Minimum			Adults	Grilse	Adults	Grilse	
1	36.1	8.9	11.1	9.4	clear	4.200					
2	37.8	10.0	11.7	9.4	clear	4.200					
3	40.0	10.0	11.1	9.7	partly cloudy	4.200					
4	37.2	12.2	11.1	10.0	clear	4.228					
5	38.9	13.3	11.1	10.3	clear	4.200					
6	43.3	11.7	11.7	10.6	clear	4.228					
7	42.8	13.9	11.7	10.6	clear	4.228					
8	40.0	17.2	11.7	11.1	clear	4.228					
9	40.0	15.6	11.7	11.1	clear	4.228					
10	39.4	14.4	12.2	11.1	clear	5.208					
11	35.0	12.2	11.4	11.1	clear	5.796					
12	31.1	10.0	11.7	10.8	clear	4.256					
13	30.6	8.3	11.1	10.6	clear	4.256					
14	30.0	7.8	11.1	10.6	cloudy	4.256					
15	25.6	11.1	10.3	10.0	cloudy	4.284					
16	17.2	11.1	10.3	10.3	rain	4.284					
17	27.8	10.6	11.7	10.0	clear	4.284					
18	28.9	10.0	12.8	11.9	cloudy	4.284					
19	26.7	11.1	12.8	12.2	cloudy	4.284					
20	26.7	13.9	12.8	12.2	cloudy	4.284					
21	32.2	10.0	13.3	12.5	partly cloudy	4.284					
22	33.3	10.0	13.3	12.8	clear	4.340					
23	35.0	8.9	13.6	12.8	clear	4.424					
24	34.4	10.6	13.6	13.1	clear	4.396					
25	38.3	10.6	13.9	13.1	clear	4.368					
26	38.9	10.6	13.9	13.3	clear	4.256					
27	41.7	11.1	14.2	13.6	clear	4.200					
28	36.1	14.4	14.2	13.6	clear	4.228					
29	35.0	14.4	13.9	13.3	clear	4.200					
30	27.2	11.1	13.9	13.3	clear	4.228					
31	36.7	13.3	13.6	11.1	clear	4.256	962	3			
TOTALS							962	3			

* Temperatures recorded in F, and later converted to C.

** Calculated equivalents of USGS records of flows in cfs.

Appendix Table 3 (Continued)

September	Temperature (C*)				Weather	Flow of Trinity River at Lewiston (m ³ /sec**)	Fish trapped				
	Air		Water				King salmon		Silver salmon		Steelhead
	Maximum	Minimum	Maximum	Minimum			Adults	Grilse	Adults	Grilse	
1	37.2	11.1	13.3	13.3	clear	5.152					
2	33.9	15.6	13.3	12.8	partly cloudy	5.684					
3	34.4	11.7	13.3	13.1	clear	5.628					
4	31.1	11.7	12.8	12.5	partly cloudy	5.600					
5	30.6	15.6	12.8	12.2	fog-clear	5.628	815	2			
6	27.8	12.2	13.1	12.5	clear	5.628					
7	32.2	7.8	13.1	12.5	clear	4.900	510	2			
8	32.2	9.4	12.2	11.4	clear	4.340					
9	26.7	7.8	11.7	11.4	clear	5.068					
10	26.1	4.4	11.7	11.1	clear	5.712					
11	21.1	3.3	11.1	11.1	rain	5.684	796	5			
12	25.6	7.8	10.8	10.6	clear	5.684					
13	30.0	3.9	10.6	10.0	clear	5.684					
14	33.9	4.4	10.6	10.3	clear	5.656	841	16			
15	35.6	4.4	10.3	9.7	clear	5.684					
16	34.4	5.6	11.1	10.0	clear	5.684					
17	30.6	7.8	11.1	9.4	clear	5.684					
18	25.0	6.1	10.8	9.4	clear	5.684	949				
19	22.2	8.9	10.0	9.4	clear	5.684					
20	28.9	1.7	10.3	9.4	clear	5.684					
21	28.3	5.6	10.0	9.4	cloudy	5.628	828	11			
22	27.8	8.9	9.4	9.4	clear	5.656					
23	21.1	1.7	9.2	8.3	clear	5.628					
24	21.1	0.6	8.9	8.1	clear	5.656					
25	21.1	3.9	8.1	8.1	rain	5.712	698	9			
26	21.1	9.4	8.1	8.1	rain	5.740					
27	21.7	8.3	8.3	7.8	partly cloudy	5.684					
28	25.6	8.3	8.9	8.3	clear	5.684	498	14			
29	28.9	5.6	9.7	8.3	clear	5.684					
30	29.4	6.7	9.4	8.6	clear	5.684					
TOTALS							5,935	59			

* Temperatures recorded in F, and later converted to C.

** Calculated equivalents of USGS records of flows in cfs.

Appendix Table 3 (Continued)

October	Temperature (C*)				Weather	Flow of Trinity River at Lewiston (m ³ /sec**)	Fish trapped				
	Air		Water				King salmon		Silver salmon		Steelhead
	Maximum	Minimum	Maximum	Minimum			Adults	Grilse	Adults	Grilse	
1	28.9	7.2	9.4	8.6	clear	5.684					
2	32.2	8.3	9.7	8.6	clear	5.684	457	20			
3	33.3	5.0	10.0	8.9	clear	5.656					
4	31.1	8.3	10.6	9.2	clear	5.628					
5	29.4	8.3	10.3	9.2	clear	5.684	323	32			
6	26.7	2.2	10.6	9.2	clear	5.684					
7	27.8	5.6	10.6	10.0	clear	5.684					
8	20.6	7.8	10.0	9.4	cloudy	5.684					
9	15.6	11.1	10.0	9.7	cloudy	5.768					
10	15.6	10.0	9.7	9.4	rain	5.796	327	25			
11	15.6	7.8	9.7	8.9	rain	5.712					
12	16.7	7.8	9.7	9.2	cloudy	5.628	212	5		8	
13	20.6	7.8	9.7	8.9	cloudy	5.628					
14	12.2	8.9	9.2	8.9	rain	5.628					
15	12.8	8.9	9.2	8.9	rain	6.552					
16	18.9	7.8	8.9	8.9	cloudy	7.112	657	33		10	
17	18.9	7.8	9.2	8.6	cloudy	7.140					
18	22.6	8.3	8.9	8.9	clear	7.140					
19	21.1	6.7	9.4	8.9	clear	7.224	626	36		25	
20	20.0	6.7	9.7	8.9	clear	7.224					
21	21.1	6.7	9.4	8.9	clear	7.252					
22	21.1	8.3	9.4	9.2	clear	7.308					
23	22.2	9.4	9.7	9.2	clear	7.308					
24	21.1	7.2	10.0	9.2	clear	7.280	563	10	3	50	
25	24.4	-0.6	9.7	8.9	clear	7.252					
26	21.1	0.6	8.9	8.6	clear	7.252	401	23		107	
27	18.9	-1.1	9.2	8.3	clear	7.224					
28	11.1	-1.1	8.3	8.1	cloudy	7.224					
29	12.2	-2.8	8.1	7.8	clear	7.140					
30	14.4	-5.0	8.1	7.5	clear	7.112	312	55	5	83	2
31	15.6	-3.3	7.8	7.2	cloudy	7.112					
TOTALS							3,878	239	8	283	2

* Temperatures recorded in F, and later converted to C.

** Calculated equivalents of USGS records of flows in cfs.

Appendix Table 3 (Continued)

November	Temperature (C*)				Weather	Flow of Trinity River at Lewiston (m ³ /sec**)	Fish trapped				
	Air		Water				King salmon		Silver salmon		Steelhead
	Maximum	Minimum	Maximum	Minimum			Adults	Grilse	Adults	Grilse	
1	8.9	4.4	7.5	7.2	rain	7.112					
2	18.3	5.6	8.1	7.5	clear	7.084	114	12	2	136	1
3	11.1	5.6	7.8	7.8	rain	7.196					
4	15.0	6.7	8.3	8.1	rain	7.196					
5	13.9	1.1	8.6	7.8	clear	7.224					
6	12.2	1.1	8.3	7.8	cloudy	7.224	105	22	6	475	
7	6.7	4.4	8.1	8.1	rain	7.224					
8	14.4	1.1	8.6	7.8	clear	7.196					
9	5.6	2.2	8.1	8.1	rain	7.224	39	3	10	438	1
10	7.8	3.3	8.1	7.8	cloudy	7.224					
11	12.8	2.8	8.1	7.8	cloudy-clear	7.224					
12	11.7	2.8	8.1	7.8	cloudy	7.224					
13	7.8	5.6	7.8	7.8	cloudy	7.224	9	1	7	393	
14	10.0	4.4	7.8	7.5	cloudy-rain	7.224					
15	8.9	5.6	7.8	7.5	rain	6.356					
16	8.9	8.9	7.8	7.5	cloudy-rain	5.684			8	322	
17	7.8	2.2	7.8	7.5	clear	5.600					
18	17.2	1.1	8.1	7.5	partly cloudy	5.600					
19	10.6	3.3	7.8	7.5	partly cloudy	5.600					
20	11.1	1.1	7.8	7.5	clear	5.600			6	123	
21	6.7	1.1	7.8	7.5	rain	5.600					
22	14.4	4.4	8.1	7.5	clear	5.600					
23	12.2	0.6	8.1	7.5	clear	5.600					
24	8.9	1.1	7.8	7.5	clear	5.600					
25	10.0	1.1	7.8	7.5	clear	5.600					
26	13.3	2.8	7.8	7.5	clear	5.600					
27	12.2	3.3	7.8	7.5	clear	5.600			4	180	
28	14.4	2.8	8.1	7.5	clear	5.600					
29	13.3	1.1	7.8	7.5	clear	5.600					
30	10.0	1.7	7.8	7.5	clear	5.600			2	134	
TOTALS							267	38	45	2,201	2

* Temperatures recorded in F, and later converted to C.

** Calculated equivalents of USGS records of flows in cfs.

Appendix Table 3 (Continued)

December	Temperature (C*)				Weather	Flow of Trinity River at Lewiston: (m ³ /sec**)	Fish trapped				
	Air		Water				King salmon		Silver salmon		Steelhead
	Maximum	Minimum	Maximum	Minimum			Adults	Grilse	Adults	Grilse	
1	13.0	1.1	7.8	7.5	fog-clear	4.872					
2	4.4	1.1	7.5	7.5	fog	4.312					
3	1.1	0.0	7.2	7.2	snow	4.340					
4	4.4	-1.1	7.2	6.9	cloudy	4.340			3	72	
5	0.0	-5.6	6.9	6.9	snow	4.340					
6	4.4	-4.4	6.7	6.7	snow	4.368					
7	1.1	-5.6	6.7	6.4	snow	4.368			1	33	
8	-3.3	-16.7	6.1	5.8	clear	4.368					
9	-2.2	-18.3	5.6	5.3	cloudy	4.368					
10	-1.7	-16.7	5.3	5.0	clear	4.368					
11	0.0	-13.9	5.0	4.4	clear	4.368			1	23	
12	1.1	-10.0	4.4	4.4	snow	4.424					
13	-0.6	-5.6	3.9	3.9	cloudy	4.396					
14	1.1	-6.1	3.9	3.6	cloudy	4.368					
15	1.7	-6.1	3.9	3.6	cloudy	4.368					
16	3.3	0.6	3.9	3.6	rain	4.452					
17	4.4	0.6	4.7	4.4	rain	4.508					
18	4.4	1.1	5.3	5.0	rain	4.508					
19	8.9	2.2	6.1	5.6	cloudy	4.508					
20	8.9	3.3	6.4	6.1	cloudy	4.424					
21	9.4	4.4	6.7	6.7	rain	4.424					
22	12.2	4.4	6.9	6.7	cloudy	4.368					
23	11.1	5.6	6.9	6.7	rain	4.340					
24	10.0	5.6	7.5	6.7	clear	4.340					
25	8.9	1.1	7.2	7.2	clear	4.368					
26	3.3	0.6	7.2	6.9	cloudy	4.340					
27	3.3	0.0	7.2	6.9	rain	4.368					
28	6.7	-2.2	7.2	6.7	clear	4.340					
29	2.2	-3.3	6.9	6.7	cloudy	4.340					
30	4.4	-2.2	6.7	6.7	cloudy	4.340					
31	5.6	-2.2	6.7	6.4	fog	4.340					
TOTALS									5	128	

* Temperatures recorded in F, and later converted to C.

** Calculated equivalents of USGS records of flows in cfs.

January	Temperature (C*)				Weather	Flow of Trinity River at Lewiston (m ³ /sec**)	Fish trapped				
	Air		Water				King salmon		Silver salmon		Steelhead
	Maximum	Minimum	Maximum	Minimum			Adults	Grilse	Adults	Grilse	
1	6.7	-3.9	6.7	6.1	clear	4.340					
2	10.0	-2.2	6.4	6.1	clear	4.312					
3	6.7	-5.0	6.4	6.1	clear	4.312					
4	5.6	-5.0	6.1	5.8	clear	4.312					
5	5.6	-7.2	6.1	5.6	clear	4.312					
6	6.1	-6.7	5.8	5.6	clear	4.340					
7	5.0	-7.8	5.6	5.6	clear	4.340					
8	0.6	-6.7	5.3	5.3	snow	4.340					
9	2.8	0.0	5.3	5.0	rain	4.368					
10	1.7	0.6	5.3	5.0	rain	4.368					
11	3.3	0.6	5.0	5.0	rain	4.564					
12	6.1	1.1	5.3	5.0	rain	4.480					
13	10.0	3.3	5.6	5.0	cloudy	4.452					
14	7.8	1.7	6.4	5.6	cloudy	4.424					
15	5.6	2.2	6.1	6.1	rain	4.480					
16	12.2	4.4	6.1	6.1	rain	4.676					
17	6.7	1.7	6.1	6.1	rain	4.508					
18	8.3	3.3	6.4	6.1	cloudy	4.508					
19	8.3	-2.8	6.1	5.8	clear	4.368					
20	7.8	-3.3	6.1	5.8	cloudy-rain	4.340					
21	2.8	0.0	6.1	6.1	cloudy	4.312					
22	8.9	-1.1	6.4	6.1	clear	4.284				5	
23	9.4	-1.1	6.4	6.1	clear	4.284					
24	0.0	-0.6	6.1	6.1	rain	4.312					
25	7.2	0.0	6.1	6.1	cloudy	4.312					
26	3.3	-2.2	6.1	5.8	cloudy	4.312				9	
27	5.6	-3.3	6.1	6.1	clear-cloudy	4.312					
28	12.2	-2.2	6.1	5.8	clear	4.312					
29	5.0	0.0	5.8	5.8	rain	4.312				3	
30	7.8	1.7	6.1	5.8	rain	4.312					
31	10.0	-1.1	6.1	5.6	clear	4.312					
TOTALS											
17											

* Temperatures recorded in F, and later converted to C.

** Calculated equivalents of USGS records of flows in cfs.

Appendix Table 3 (Continued)

February	Temperature (C*)				Weather	Flow of Trinity River at Lewiston. (m ³ /sec**)	Fish trapped				
	Air		Water				King salmon		Silver salmon		Steelhead
	Maximum	Minimum	Maximum	Minimum			Adults	Grilse	Adults	Grilse	
1	12.2	-1.1	6.1	5.8	clear	4.312					
2	11.7	0.6	6.4	5.8	cloudy	4.312					
3	10.0	3.3	6.1	6.1	rain	4.340					
4	6.7	3.3	6.4	6.1	rain	4.396					
5	10.0	3.3	6.7	6.4	cloudy	4.396					
6	8.9	4.4	6.7	6.4	rain	4.424					
7	9.4	4.4	6.7	6.4	rain	4.424					
8	8.3	3.9	6.7	6.7	rain	4.424					
9	10.0	5.6	6.9	6.7	cloudy	4.452				7	
10	7.8	2.8	6.9	6.7	rain	4.424					
11	11.7	2.8	6.9	6.7	cloudy-clear	4.396					
12	7.8	0.6	6.7	6.4	rain-cloudy	4.396					
13	10.0	3.3	6.9	6.4	cloudy	4.368				19	
14	10.0	4.4	6.9	6.7	rain	4.396					
15	15.6	1.1	7.2	6.7	clear	4.368					
16	17.8	1.7	7.5	6.7	clear	4.368				13	
17	15.6	1.7	7.2	6.9	clear	4.340					
18	18.3	-3.3	7.8	6.9	clear	4.340					
19	18.9	-4.4	7.8	6.7	clear	4.340					
20	20.0	-2.2	7.8	6.7	clear	4.340				3	
21	21.1	-2.8	7.8	6.7	clear	4.340					
22	14.4	-1.1	7.8	6.9	clear	4.368				5	
23	13.3	-0.6	7.2	6.9	cloudy	4.396					
24	10.0	5.6	6.9	6.9	rain	4.340					
25	11.1	5.6	7.2	6.9	rain	4.340					
26	8.3	6.7	7.2	6.9	rain	4.256				21	
27	8.9	4.4	7.2	6.9	rain	4.200					
28	12.2	5.0	7.2	6.9	rain	4.144					
TOTAL											68

* Temperatures recorded in F, and later converted to C.

** Calculated equivalents of USGS records of flows in cfs.

Appendix Table 3 (Continued)

March	Temperature (C*)				Weather	Flow of Trinity River at Lewiston (m ³ /sec**)	Fish trapped				
	Air		Water				King salmon		Silver salmon		Steelhead
	Maximum	Minimum	Maximum	Minimum			Adults	Grilse	Adults	Grilse	
1	13.3	2.2	7.2	6.9	cloudy	4.032					20
2	16.7	0.0	7.8	7.2	clear	4.116					
3	6.1	1.1	7.5	7.2	rain	4.116					
4	11.1	1.7	7.8	7.5	cloudy	4.116					
5	13.9	0.0	8.1	7.5	cloudy	4.116					20
6	7.2	2.8	7.8	7.5	rain	4.144					
7	10.6	1.1	8.3	7.5	cloudy	4.200					
8	16.7	1.1	8.3	7.5	cloudy	4.200					18
9	18.9	3.3	8.3	7.8	clear	4.200					
10	17.8	6.7	7.8	7.8	clear	4.144					
11	18.9	1.1	7.8	7.8	cloudy	4.060					
12	15.0	-3.3	7.2	6.9	clear	4.116					20
13	11.7	-0.6	6.9	6.7	cloudy	4.144					
14	17.8	-3.3	7.2	6.4	clear	4.144					
15	23.3	-1.7	7.5	6.7	clear	7.224					3
16	13.9	3.9	7.8	6.9	cloudy	9.744					15
17	8.9	-1.1	7.2	6.9	cloudy	9.604					
18	13.3	-3.3	7.2	6.7	cloudy	9.492					
19	6.7	5.6	6.7	6.7	rain	9.464					16
20	8.9	0.6	6.9	6.7	rain	9.604					
21	5.6	0.0	6.7	6.4	snow	9.688					
22	14.4	-2.2	7.2	6.4	clear	9.548					1
23	20.0	-1.1	7.2	6.4	clear	9.492					
24	20.6	-1.1	7.8	6.9	partly cloudy	9.492					
25	19.4	1.7	8.1	7.2	partly cloudy	9.464					
26	18.9	2.2	7.8	7.2	partly cloudy	9.464					24
27	14.4	-2.2	7.2	7.2	cloudy-rain	9.604					
28	13.9	-2.8	7.8	7.2	clear	9.744					
29	14.4	-2.2	7.2	6.9	cloudy	9.716					12
30	6.7	3.3	7.2	6.9	rain	7.896					
31	12.8	0.0	7.2	6.9	clear-rain	4.424					
TOTALS											149

* Temperatures recorded in F, and later converted to C.

** Calculated equivalents of USGS records of flows in cfs.

Appendix Table 3 (Continued)

April	Temperature (C*)				Weather	Flow of Trinity River at Lewiston (m ³ /sec**)	Fish trapped				
	Air		Water				King salmon		Silver salmon		Steelhead
	Maximum	Minimum	Maximum	Minimum			Adults	Grilse	Adults	Grilse	
1	13.9	-2.2	6.9	6.7	clear	4.424					
2	17.8	-3.9	7.5	6.9	clear	4.396				17	
3	22.2	-3.3	7.8	7.2	clear	4.368					
4	26.7	-1.7	8.3	7.2	clear	4.368					
5	27.8	1.1	8.9	7.8	clear	4.340					
6	26.1	1.7	8.3	7.8	clear	4.312				4	
7	23.3	0.0	8.6	7.8	clear	4.284					
8	26.7	-1.1	9.4	8.3	partly cloudy	4.284					
9	25.6	2.2	9.2	8.3	cloudy	4.284				3	
10	26.7	4.4	9.4	8.3	clear	4.256					
11	25.6	3.3	10.0	9.7	clear-cloudy	4.284					
12	18.9	3.9	10.0	10.0	partly cloudy	4.312				3	
13	15.0	5.6	9.7	9.2	cloudy	4.340					
14	21.1	2.2	9.2	8.0	clear	4.340					
15	17.8	4.4	9.4	8.6	cloudy	4.312					
16	13.3	7.8	9.2	8.9	rain	4.340				1	
17	12.2	4.4	8.6	8.6	clear	4.368					
18	13.3	-2.8	8.3	8.1	cloudy	4.340					
19	15.6	-1.1	8.6	7.8	clear	4.340				5	
20	16.7	-1.1	8.1	7.8	clear	4.340					
21	24.4	6.7	9.2	8.1	clear	4.368					
22	26.7	10.0	9.2	8.3	clear	4.368					
23	26.7	1.1	9.4	8.3	clear	4.396					
24	26.7	2.2	9.2	8.6	clear	4.396					
25	31.1	2.8	10.0	9.2	clear	4.368					
26	32.2	5.0	10.8	9.2	clear-cloudy	4.368					
27	28.9	5.6	10.3	8.9	partly cloudy	4.424					
28	26.7	11.1	8.9	8.9	cloudy	4.452					
29	21.1	5.6	8.9	8.9	clear	4.452					
30	23.3	0.0	9.7	9.4	clear	4.480					
TOTALS											

33

* Temperatures recorded in F, and later converted to C.

** Calculated equivalents of USGS records of flows in cfs.

May	Temperature (C*)				Weather	Flow of Trinity River at Lewiston (m ³ /sec**)	Fish trapped				
	Air		Water				King salmon		Silver salmon		Steelhead
	Maximum	Minimum	Maximum	Minimum			Adults	Grilse	Adults	Grilse	
1	25.0	1.1	10.8	8.6	clear	4.340					
2	23.3	4.4	10.6	8.9	partly cloudy	4.340					
3	22.2	4.4	10.0	9.4	partly cloudy	4.340					
4	17.2	6.7	10.8	10.3	partly cloudy	4.340					
5	24.4	0.6	11.1	10.6	clear	4.340					
6	24.4	3.3	11.7	11.1	clear	4.340					
7	24.4	5.6	12.2	11.1	clear	4.340					
8	26.7	5.6	12.8	11.9	clear	4.340					
9	27.8	2.2	12.8	12.2	cloudy	4.340					
10	28.3	3.3	13.3	12.5	clear	4.340					
11	32.2	3.3	13.1	12.8	clear	4.340					
12	35.6	6.1	10.8	10.8	clear	4.368					
13	34.4	8.9	11.7	9.7	clear	4.368					
14	35.0	11.1	10.6	10.0	cloudy	4.340					
15	33.3	9.4	10.8	9.4	clear	4.340					
16	35.6	10.0	10.6	9.4	clear	4.340					
17	37.8	11.1	10.6	8.9	clear	4.340					
18	35.6	11.1	10.6	9.2	clear	4.340					
19	30.6	6.7	10.0	9.2	clear	4.340					
20	28.9	5.6	10.0	8.9	clear	4.340					
21	31.1	8.9	10.3	8.9	clear	4.340					
22	30.0	6.7	10.0	8.9	clear	4.284					
23	26.7	7.2	9.4	9.4	cloudy	4.284					
24	25.6	11.1	9.2	8.9	rain	4.284					
25	21.1	8.3	8.9	8.3	cloudy	4.284					
26	23.3	1.1	9.4	8.1	cloudy	4.284					
27	29.4	6.1	10.0	8.6	clear	4.256					
28	35.6	6.7	10.3	8.9	clear	4.284					
29	36.7	8.3	11.4	9.2	clear	4.284					
30	31.7	13.3	10.0	9.4	cloudy	4.256					
31	23.3	12.2	9.2	9.2	cloudy-rain	4.256					
TOTALS											

* Temperatures recorded in F, and later converted to C.

** Calculated equivalents of USGS records of flows in cfs.

Appendix Table 3 (Continued)

June	Temperature (C*)				Weather	Flow of Trinity River at Lewiston (m ³ /sec**)	Fish trapped				
	Air		Water				King salmon		Silver salmon		Steelhead
	Maximum	Minimum	Maximum	Minimum			Adults	Grilse	Adults	Grilse	
1	29.4	11.1	9.4	8.6	clear	4.200					
2	27.8	12.2	10.6	8.9	cloudy	4.200					
3	28.9	6.7	10.6	9.4	clear	4.172					
4	34.4	5.6	11.4	10.6	clear	4.200					
5	35.0	7.2	11.7	10.6	clear	4.228					
6	36.1	10.0	11.1	10.3	clear	4.256					
7	35.6	8.3	11.1	10.6	clear	4.340					
8	37.2	10.0	11.1	10.8	clear	4.340					
9	36.7	11.1	11.1	10.8	clear	4.340					
10	32.2	8.3	11.1	10.6	clear	4.340					
11	31.1	7.8	11.1	10.0	clear	4.312					
12	27.8	8.9	10.6	10.0	cloudy	4.312					
13	23.3	10.0	10.3	10.0	cloudy	4.312					
14	23.3	3.9	10.6	9.7	cloudy	4.284					
15	24.4	3.3	10.0	9.4	clear	4.284					
16	21.7	10.0	10.3	9.7	partly cloudy	4.284					
17	20.6	7.8	9.7	9.4	clear	4.312					
18	29.4	3.3	10.3	9.4	clear	4.312					
19	35.6	3.3	11.1	9.4	clear	4.312					
20	38.9	9.4	10.8	9.7	clear	4.312					
21	35.6	10.6	11.1	10.0	cloudy	4.312					
22	23.3	12.8	10.8	10.0	clear	4.312					
23	29.4	13.3	10.3	10.3	cloudy	4.340					
24	32.2	8.3	10.6	9.7	clear	4.312					
25	33.3	12.2	11.1	9.7	clear	4.312					
26	39.4	12.2	11.4	10.3	clear	4.312					
27	38.9	12.2	11.9	10.6	clear	4.368					
28	37.8	14.4	11.1	10.6	clear	4.368					
29	34.4	13.3	11.1	10.2	clear	4.368					
30	31.7	7.8	11.1	10.0	clear	4.368					
GRAND TOTAL							11,042	339	58	2,612	271

* Temperatures recorded in F, and later converted to C.

** Calculated equivalents of USGS records of flows in cfs.