GAS BUBBLE TRAUMA MONITORING IN THE CLEARWATER RIVER DRAINAGE, IDAHO, 1996

REPORT TO BONNEVILLE POWER ADMINISTRATION AND NATIONAL MARINE FISHERIES SERVICE, PORTLAND, OR

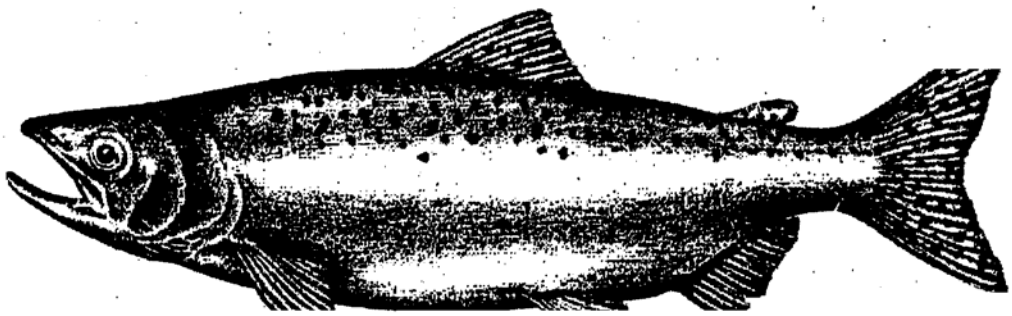

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TABLE OF CONTENTS

ABSTRACT 1

INTRODUCTION 2

STUDY AREA 2

METHODS 4

FINDINGS 5

DISCUSSION 6

LITERATURE CITED. 7

LIST OF TABLES

Table 1. Relationship of date and week number for gas bubble trauma monitoring in the Clearwater River, 1996 8

Table 2. Percent total dissolved gas (TDG), average daily discharge (KCFS) by date for the N.F. Clearwater River immediately below Dworshak Dam, Clearwater County, Idaho, 1996 (Information provided by U.S. Army Corps of Engineers) 9

Table 3. Number of fish captured in the N.F. Clearwater River (Section 1), 1996. Numbers in parentheses indicate individual fish with gas bubble trauma 10

Table 4. Number of fish captured in the Clearwater River (Section 2), 1996. Numbers in parentheses indicate individual fish with gas bubble trauma 11

Table 5. Number of fish captured in the Clearwater River (Section 3), 1996. Numbers in parentheses indicate individual fish with gas bubble trauma 12

Table 6. Number of fish captured in the Clearwater River (Section 4), 1996. Numbers in parentheses indicate individual fish with gas bubble trauma 13

Table 7. Number of fish captured in the Clearwater River (Section 5), 1996. Numbers in parentheses indicate individual fish with gas bubble trauma 14

Table 8. Number of fish captured in the Clearwater River (All sections), 1996. Numbers in parentheses indicate individual fish with gas bubble trauma 15

LIST OF FIGURES

Figure 1. Location of gas bubble .trauma sampling on the lower Clearwater River and the N.F. Clearwater River, 1996 ... 3

ABSTRACT

A two person crew electroshocked the Clearwater and N.F. Clearwater rivers during the spring and summer months in 1996 to monitor gas bubble trauma on individual fish during periods of spill and non-spill from Dworshak Dam. A total of 5,961 individual fish representing 19 species were sampled. Seventeen fish representing four species were found displaying gas bubble trauma. Fish species with gas bubble trauma included kokanee salmon (*Oncorhynchus nerka*), mountain whitefish (*Prosopium williamsoni*), rainbow trout (*Oncorhynchus mykiss*), and largescale sucker (*Catostomus macrocheilus*).

INTRODUCTION

Dissolved gas levels in the Clearwater River were expected to exceed standards of the Idaho Division of Environmental Quality (110% saturation) when discharges from Dworshak Dam exceeded 15,000 cfs during. periods. of flow augmentation for listed Snake River chinook salmon' during 1996. The National Marine Fisheries Service requested a variance from these standards to allow a spill program that could result in total dissolved gas levels up to 120% saturation to begin April 1, 1996. These levels of spill could occur intermittently throughout the juvenile chinook salmon (*Oncorhynchus tshawytscha*) migration and flow augmentation period (through August 31, 1996).

Based on total dissolved gas (TDG) sampling conducted by the U.S. Army corps of Engineers in 1994, TDG levels decrease continuously from below Dworshak Dam to River Mile 0 (confluence with Snake River). To ensure the effects of the highest TDG levels are assessed, sampling was prioritized in the North Fork Clearwater River and in the Clearwater River immediately below the confluence of the North Fork Clearwater River. To assess the extent of effects, lower priority sampling occurred downstream to the mouth of the Clearwater River.

The emphasis of this project is to address the impacts of TDG levels on resident fish species and selected invertebrate species. Anadromous fish species (steelhead trout Oncorhynchus mykiss, chinook salmon, coho salmon Oncorhynchus kisutch and Pacific lamprey Lampetra tridentata) are also in the river corridor during the defined sampling period.

STUDY AREA

The area monitored included approximately 1.5 miles of the North Fork Clearwater River from Dworshak Dam downstream to its confluence with the Clearwater River (Figure 1) and 41 miles of the Clearwater River downstream of the North Fork Clearwater River to its confluence with the Snake River. The affected area was divided into five sections:

(Section 1)--the 1.5 miles of North Fork Clearwater River between Dworshak Dam and the Clearwater River;
(Section 2)--the 12 miles of Clearwater River from the North Fork Clearwater River (RM41) downstream to the town of Lenore (RM 29);
(Section 3)--the 14 miles of Clearwater River from the town of Lenore downstream to the Potlatch River (RM 15);
(Section 4)--the 13 miles of Clearwater River from the Potlatch River downstream to the Memorial Bridge at Lewiston (RM 2); and,
(Section 5)--the two miles of Clearwater River from the Memorial Bridge downstream to the Snake River (RM 0).

Sections 1-4 are free flowing river areas while Section 5 is slack water habitat of the upper Lower Granite Dam pool. Section 5 fish habitat is not typically riverine but rather consists of relatively slow moving water with the shorelines lined with riprap material (large boulders).

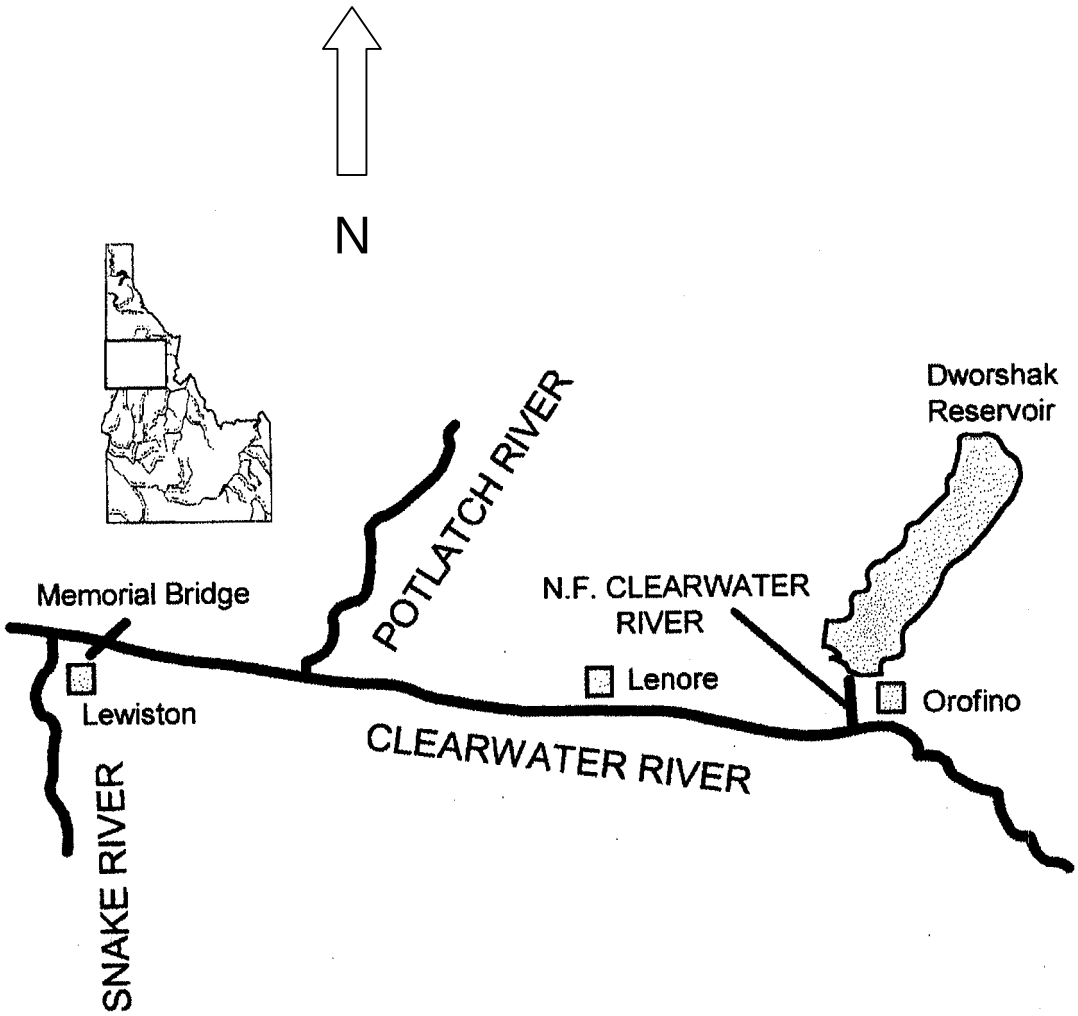

Figure 1. Location of gas bubble trauma sampling on the lower Clearwater River and the N.F. Clearwater River, 1996.

METHODS

Captures of individual fish were accomplished using standardized electroshocking techniques utilizing a 6-m aluminum boat constructed for sampling large rivers. The equipment consists of a generator-powered pulsator providing controlled power to two electrodes supported by arm booms at the front of the boat. As fish were drawn to either electrode, netters on the boat bow captured the fish and placed them in a fresh flow live box until adequate numbers were obtained for sorting and examination.

Numbers and species of, fish collected were recorded for each established transect. Fish were anesthetized using tricanemethonate (MS-222). After anesthetization each fish was examined for external indications of GBT (exophthalmia and macroscopic bubbles in fins and on body surfaces). This examination was accomplished using 2x-6x magnifying lenses and a 40x microscope. Locations and extent of bubbles were noted for each fish. The fish were recovered using fresh water and then released within the sections from which they were collected.

A rank was assigned upon the percent area of the fin, eye or lateral line covered with bubbles. A rank of 0 was assigned if no bubbles occurred. Rank 1 was assigned if greater than 0 and less than or equal to 5% of an affected organ was covered. Rank 2 was assigned if bubbles, occupied 6 to 25% of the fin, eye or lateral line. Rank 3 occurred if 25 to 50% of the fin, eye or lateral line was affected. Rank 4 was assigned if greater than 50% of the organ was affected. If bubbles occurred in one eye the rank would be for that eye only. If bubbles occurred in both eyes, the eye with the greatest area having bubbles would be ranked and recorded. If the area covered by bubbles was estimated to be near the boundary between ranks, then the higher rank was reported. A summary of ranks to be used in recording GBT data is listed below.

Rank	Percent area affected
0	0
1	1 to 5%
2	6 to 25%
3	26 to 50%
4	greater than 50%

Because of the concern regarding electroshocking trauma to the smaller chinook salmon juveniles, capture of these fish was avoided when possible.

Sampling was conducted once a week per. river section from April 8 through August 30 (Table 1).

An attempt was made to assess the incidence of GBT on aquatic invertebrates. The target species was crayfish

(*Pacifastacus spp*). Crayfish were captured and examined for GBT when electoshocked.

FINDINGS

The average daily discharge from Dworshak Dam and TDG in the North Fork Clearwater River for the period. April 8 through August 30 are given in Table 2.

Total dissolved gas levells were equal to or in excess of 110% in 13 of the sampling periods (Table 2). Levels equal to or in excess of 120% were found during five of the sampling weeks. Individual fish exhibiting GBT were observed in three of 21 sampling weeks and from only Sections 1 and 2.

Total dissolved gas levels equal to or exceeding 120% were associated with Dworshak Dam discharges greater than 20,000 cfs (10,000 cfs spill) while levels of 110% were associated with a range of flows even down to, the extreme low powerhouse flow of 1,100 cfs (no spill).

Nineteen different fish species were identified during the sampling period. A total of 5,961 individual fish was sampled during the study period (Tables 3-8). The most common species was mountain whitefish (*Prosopium williamsoni*). The next most abundant species was the largescale sucker (*Catostomus macrocheilus*). Because of the abundance of the sucker species, only a representative sample of these fish were captured. Kokanee salmon (*Oncorhynchus nerka*) are not resident species found in the North Fork Clearwater or Clearwater rivers, but are there as a result of entrainment through Dworshak Dam. Eighty percent of the kokanee salmon were collected in Section 1, immediately below Dworshak Dam.

Seventeen individual fish representing four species were found displaying gas bubble trauma (GBT) throughout the study period (weeks 19-21). Total dissolved gas levels were 120% saturation throughout most of this time period (Table 2). Excepting a rank 3 GBT on a kokanee salmon collected from Section 1 during week 19, all other incidences were rank 1. With exception of 171 kokanee salmon, seven hatchery steelhead trout and one hatchery spring chinook salmon, 5,782 individual resident fish were captured and of those only 9 (0.2%) displayed GBT. Of the nine fish showing GBT, two were mountain whitefish, three were rainbow trout and. four were sucker species.

Seven crayfish were captured and none showed signs of GBT.

DISCUSSION

In 1995 no anadromous species exhibited signs of GBT (Cochnauer 1995), while in 1996 seven hatchery steelhead trout showed signs. It was expected that few if any anadromous fish species would display GBT as these fish are in a migratory mode and travel through the 41 plus mile corridor in a relatively short period of time and thus are only exposed briefly to high levels of TDG. The steelhead trout with GBT in 1996 were collected only from Section l and were probably residualized fish that would not migrate. These. fish were captured during weeks and 21, outside the window of steelhead smolt migration.

As in 1995 (Cochnauer 1995), the 0.2% observed incidence of GBT in 1996 is insignificant to the total fish populations within the river section impacted by high TDG. This incidence rate is probably an over estimate because of the selective nature of the investigators releasing many of the sucker species due to their abundance.

LITERATURE CITED

Cochnauer, T. 1995. Gas Bubble Trauma Monitoring in the Clearwater River Drainage, Idaho, 1995. Report to Bonneville Power Administration and National Marine Fisheries Service, Portland, OR.

Table 1. Relationship of dates and week numbers for gas bubble trauma monitoring in the Clearwater River, 1996.

Date	Week No.	Date	Week No.
Apr 8-12	1	Jun 17-21	11
Apr 15-19	2	Jun 24-27	12
Apr 22-26	3	Jul 1-4	13
Apr 29-May 3	4	Jul 8-11	14
May 5-10	5	Jul 15-18	15
May 13-17	6	Jul 22-25	16
May 18-24	7	Jul 29-Aug 1	17
May 26-Jun 1	8	Aug 5-8	18
Jun 3-7	9	Aug 12-16	19
Jun 10-14	10	Aug 19-23	20
		Aug 28-30	21

Table 2. Percent total dissolved gas (TDG), average daily discharge (KCFS) by date for the N. F. Clearwater River immediately below Dworshak Dam, Clearwater County, Idaho, 1996. (Information provided by U.S. Army Corps of Engineers).

	APR		MAY		JUNE		JULY		AUGUST	
DATE	TDG	KCFS	TDG	KCFS	TDG	KCFS	TDG	KCFS	TDG	KCFS
1	ND	ND	101	7.6	112	1.1	104	7.1	105	6.6
2	ND	ND	105	9.9	113	1.1	106	9.9	109	6.7
3	ND	ND	113	16.2	105	6.4	106	7.9	ND	6.7
4	ND	ND	119	20.7	103	6.4	104	2.1	ND	6.6
5	ND	ND	119	20.7	106	8.2	103	6.3	106	6.6
6	ND	ND	119	21.5	114	10.3	106	3.0	107	6.6
7	ND	ND	120	22.6	115	10.3	105	1.8	106	6.6
8	ND	ND	119	21.5	110	9.8	104	6.8	105	6.4
9	ND	ND	107	15.1	111	9.9	105	6.2	107	6.6
10	ND	ND	120	22.6	111	9.9	96	3.3	107	6.6
11	ND	ND	120	22.6	111	10.0	104	5.7	107	6.6
12	ND	ND	120	22.6	111	9.6	106	5.7	106	6.6
13	ND	ND	120	22.5	108	9.7	ND	6.4	106	6.6
14	ND	ND	102	15.5	114	8.0	108	7.0	105	9.3
15	ND	ND	102	9.6	110	10.4	104	7.9	110	13.5
16	92	9.8	108	1.2	110	10.4	104	9.4	122	21.8
17	108	5.2	110	1.1	109	10.4	104	8.6	122	21.9
18	110	5.3	108	1.2	109	10.4	104	5.7	122	21.9
19	102	4.9	106	1.1	109	10.3	105	6.0	121	21.5
20	100	4.7	106	1.1	109	10.3	104	6.0	120	20.7
21	105	1.5	107	1.1	105	7.9	104	6.0	120	20.7
22	118	1.5	110	1.1	103	2.1	104	6.0	120	20.7
23	120	8.1	109	1.1	103	2.1	104	6.0	120	20.6
24	104	6.8	110	1.1	103	6.0	104	6.6	120	20.6
25	115	2.0	110	1.1	103	6.3	105	7.5	120	20.6
26	119	1.9	111	1.1	109	8.8	105	7.5	120	20.5
27	99	2,0	111	1.1	109	9.4	104	7.5	120	20.5
28	99	2.0	109	1.1	108	9.4	103	7.5	119	20.4
29	100	2.0	110	1.1	105	7.4	104	0.5	119	20.5
30	102	4.1	111	1.1	104	2.1	104	6.6	ND	20.5
31			112	1.1			105	6.6		

Table 3. Number of fish captured in the N.F. Clearwater River (Section 1), 1996. Numbers in parentheses indicate individual fish with gas bubble trauma.

WEEK	KOK	MWF	CUTT	RSS	DACE	HST	WRBT	SQW	SMB	SUC	SCU	CMC
1	37	4	--	--	--	1	--	--	--	54	1	--
2	--	--	--	--	--	--	--	--	--	--	--	--
3	--	--	--	--	--	--	--	--	--	--	--	--
4	41	6	--	--	--	3	3	--	--	44	3	--
5	22	27	--	--	--	10	--	--	--	61	--	--
6	--	--	--	--	--	--	--	--	--	--	--	--
7	--	--	--	--	--	--	--	--	--	--	--	--
8	2	10	--	--	--	39	--	--	--	49	3	--
9	13	11	--	--	--	31	--	--	--	42	--	--
10	--	--	--	--	--	--	--	--	--	--	--	--
11	7	11	1	1	--	59	6	1	--	34	--	8
12	--	---	--	--	--	--	--	--	--	--	--	--
13	--	21	--	2	--	50	7	2	--	34	2	1-
14	5	22	--	4	--	37	5	1	1	31	5	--
15	2	49	--	--	--	23	9	--	--	19	7	--
16	--	--	--	--	--	--	--	--	--	--	--	--
17	--	--	--	--	--	--	--	--	--	--	--	--
18	1	51	--	--	--	17	8	--	1	27	1	--
19	6(1)	62	--	--	--	10	12	1	--	11	--	--
20	--	39	--	--	--	11(1)	3(2)	--	--	12	1	--
21	2	34	--	--	--	21(6)	3(1)	--	--	8	1	--
TOTAL	138 (1)	347	1	7	--	312 (7)	56 (3)	5	2	426	24	9

KOK--Kokanee salmon
MWF--Mountain whitefish
CUTT--Cutthroat trout
RSS--Redside shiner
DACE--Dace species
HST--Hatchery steelhead trout
WRBT--Wild rainbow trout
SQW--Northern squawfish
SMB--Smallmouth bass
SUC--Largescale and bridgelip sucker
SCU--Sculpin species
CMC--Chiselmouth chub

Includes 3 bull trout and 1 rainbow/cutthroat trout hybrid captured of which none exhibited GBT.

Table 4. Number of fish captured in the N.F. Clearwater River (Section 2), 1996. Numbers in parentheses indicate individual fish with gas bubble trauma.

WEEK	KOK	MWF	CUTT	RSS	DACE	HST	WRBT	SQW	SMB	SUC	SCU	CMC
1	--	--	--	--	--	--	--	--	--	--	--	--
2	--	--	--	--	--	--	--	--	--	--	--	--
3	--	9	--	--	--	2	3	10	1	29	--	--
4	1	12	--	--	1	10	--	--	--	25	--	--
5	--	--	--	--	--	--	--	--	--	--	--	--
6	--	--	--	--	--	--	--	--	--	--	--	--
7	--	94	--	8	--	7-	--	17	4	42	--	7
8	--	--	--	--	--	--	--	--	--	--	--	--
9	4	32	--	1	--	8	--	5	1	36	--	1
10	--	--	--	--	--	--	--	--	--	--	--	--
11	1	49	--	11	--	21	--	12	1	38	4	6
12	--	53	--	3	--	25	1	14	1	35	1	2
13	--	--	--	--	--	--	--	--	--	--	--	--
14	--	51	--	--	1	8	2	13	2	36	1	--
15	1	75	--	1	--	3	--	7	--	44	1	--
16	--	--	--	--	--	--	--	--	--	--	--	--
17	--	65	--	--	--	3	2	8	--	34	--	1
18	--	88	--	--	1	3	--	13	--	25	--	--
19	--	35	--	--	--	2	--	3	--	59	--	1
20	--	85	--	1	--	3	2	3	--	22	--	2
21	--	34(2)	--	--	--	1	--	--	--	14(4)	--	--
TOTAL	7	682 (2)	--	25	3	96	10	105	10	439 (4)	7	20

KOK--Kokanee salmon
MWF--Mountain whitefish
CUTT--Cutthroat trout
RSS--Redside shiner
DACE--Dace species
HST--Hatchery steelhead trout
WRBT--Wild rainbow trout
SQW--Northern squawfish
SMB--Smallmouth bass
SUC--Largescale and bridgelip sucker
SCU--Sculpin species
CMC--Chiselmouth chub

Includes 1 bull trout 2 peamouth chubs, and 2 carp captured of which none exhibited GBT.

Table 5. Number of fish captured in the N.F. Clearwater River (Section 3), 1996. Numbers in parentheses indicate individual fish with gas bubble trauma.

WEEK	KOK	MWF	CUTT	RSS	DACE	HST	WRBT	SQW	SMB	SUC	SCU	CMC
1	1	46	--	--	--	--	--	3	--	24	--	--
2	--	--	--	--	--	--	--	--	--	--	--	--
3	--	--	--	--	--	--	--	--	--	--	--	--
4	--	27	--	2	3	10	1	3	--	44	--	--
5	--	74	--	--	--	17	--	1	1	25	--	--
6	--	--	--	--	--	--	--	--	--	--	--	--
7	--	--	--	--	--	--	--	--	--	--	--	--
8	--	70	--	2	1	8	--	16	--	42	3	2
9	--	52	--	2	--	2	--	1	--	20	--	4
10	--	--	--	--	--	--	--	--	--	--	--	--
11	--	--	--	--	--	--	--	--	--	--	--	--
12	--	50	--	--	--	10	--	8	1	35	1	1
13	2	75	--	1	--	1	1	12	--	37	--	1
14	--	35	--	1	1	5	1	8	--	47	--	--
15	--	--	--	--	--	--	--	--	--	--	--	--
16	--	40	--	--	--	2	--	3	1	56	1	--
17	--	--	--	--	--	--	--	--	--	--	--	--
18	--	83	--	--	--	--	--	7	--	44	--	--
19	--	--	--	--	--	--	--	--	--	--	--	--
20	1	66	--	--	--	2	--	4	1	35	--	3
21	--	--	--	--	--	--	--	--	--	--	--	--
TOTAL	4	618	--	8	5	57	3	66	4	409	5	13

KOK--Kokanee salmon
MWF--Mountain whitefish
CUTT--Cutthroat trout
RSS--Redside shiner
DACE--Dace species
HST--Hatchery steelhead trout
WRBT--Wild rainbow trout
SQW--Northern squawfish
SMB--Smallmouth bass
SUC--Largescale and bridgelip sucker
SCU--Sculpin species
CMC--Chiselmouth chub

Includes 9 peamouth chubs, 3 hatchery spring chinook juveniles, and 9 crayfish captured of which none exhibited GBT.

Table 6. Number of fish captured in the N.F. Clearwater River (Section 4), 1996. Numbers in parentheses indicate individual fish with gas bubble trauma. .

WEEK	KOK	MWF	CUTT	RSS	DACE	HST	WRBT	SQW	SMB	SUC	SCU	CMC
1	--	--	--	--	--	--	--	--	--	--	--	--
2	--	27	--	--	1	--	--	--	--	14	--	--
3	--	--	--	--	--	--	--	--	--	--	--	--
4	--	26	--	2	--	17	--	9	--	44	--	6
5	--	--	--	--	--	--	--	--	--	--	--	--
6	--	4	--	--	--	6	--	--	1	17	--	--
7	--	--	--	--	--	--	--	--	--	--	--	--
8	--	75	--	--	9	13	--	9	--	34	--	--
9	--	50	--	--	1	4	--	11	--	32	--	2
10	--	--	--	--	--	--	--	--	--	--	--	--
11	--	64	--	--	--	26	14	14	20	44	--	4
12	2	48	--	7	1	23	3	30	7	52	3	8
13	--	11	--	--	--	1	7	17	16	38	--	1
14	--	--	--	--	--	--	--	--	--	--	--	--
15	--	30	--	--	--	2	1	19	--	21	1	6
16	--	8	--	--	--	--	--	8	2	71	1	1
17	--	32	--	--	1	--	--	--	--	36	1	--
18	--	44	--	--	4	1	3	1	--	55	1	--
19	--	--	--	--	--	--	--	--	--	--	--	--
20	--	66	--	--	--	2	3	3	--	38	--	--
21	--	--	--	--	--	--	--	--	--	--	--	--
TOTAL	2	485	--	9	17	95	31	121	46	496	7	28

KOK--Kokanee salmon
MWF--Mountain whitefish
CUTT--Cutthroat trout
RSS--Redside shiner
DACE--Dace species
HST--Hatchery steelhead trout
WRBT--Wild rainbow trout
SQW--Northern squawfish
SMB--Smallmouth bass
SUC--Largescale and bridgelip sucker
SCU--Sculpin species
CMC--Chiselmouth chub

Includes 14 peamouth chubs and 1 carp captured of which none exhibited GBT.

Table 7. Number of fish captured in the N.F. Clearwater River (Section 5); 1996. Numbers in parentheses indicate individual fish with gas bubble trauma.

WEEK	KOK	MWF	CUTT	RSS	DACE	HST	WRBT	SQW	SMB	SUC	SCU	CMC
1	--	--	--	--	--	--	--	--	--	--	--	--
2	4	3	--	--	--	8	11	--	14	39	2	32
3	--	--	--	--	--	--	--	--	--	--	--	--
4	--	--	--	--	--	18	--	--	13	56	--	6
5	--	--	--	--	--	--	--	--	--	--	--	--
6	3	2	--	--	--	23	3	3	16	54	1	5
7	3	11	--	--	--	14	2	1	14	32	--	10
8	7	7	--	5	--	15	--	1	53	36	--	3
9	--	--	--	--	--	--	--	--	--	--	--	--
10	--	--	--	--	--	13	--	--	51	47	--	--
11	--	--	--	--	--	--	--	--	--	--	--	--
12	1	1	--	--	--	4	8	4	77	28	--	6
13	--	--	--	--	--	--	--	--	--	--	--	--
14	--	2	--	--	--	1	5	3	50	39	1	4
15	1	--	--	--	--	1	11	6	40	41	1	4
16	--	--	--	--	--	--	--	--	--	--	--	--
17	1	1	--	--	--	--	6	1	23	47	--	3
18	1	1	--	--	--	1	8	--	69	14	4	1
19	--	--	--	--	--	--	--	--	--	--	--	--
20	7	1	--	--	--	9	8	--	28	21	--	6
21	3	1	--	--	--	3	9	3	28	40	1	1
TOTAL	31	28	--	5	--	110	71	22	476	494	10	81

KOK--Kokanee salmon
MWF--Mountain whitefish
CUTT--Cutthroat trout
RSS--Redside shiner
DACE--Dace species
HST--Hatchery steelhead trout
WRBT--Wild rainbow trout
SQW--Northern squawfish
SMB--Smallmouth bass
SUC--Largescale and bridgelip sucker
SCU--Sculpin species
CMC--Chiselmouth chub

Includes 2 peamouth chubs, 4 black bullheads, 1 bluegill sunfish, 4 pumpkinseed sunfish, 3 black crappie, and 9 crayfish captured of which none exhibited GBT.

Table 8. Number of fish captured in the N.F. Clearwater River (All sections), 1996. Numbers in parentheses indicate individual fish with gas bubble trauma.

WEEK	KOK	MWF	CUTT	RSS	DACE	HST	WRBT	SQW	SMB	SUC	SCU	CMC
1	38	50	--	--	--	1	--	3	--	78	--	--
2	4	29	--	--	1	8	11	--	14	53	2	32
3	--	9	--	--	--	2	3	10	1	29	--	--
4	42	71	--	4	4	58	--	--	--	--	--	--
5	22	101	--	--	--	27	--	1	1	86	--	--
6	3	5	--	--	--	29	3	3	17	71	1	5
7	3	105	--	8	--	21	2	18	21	74	--	17
8	9	162	--	7	10	75	--	26	53	161	6	5
9	17	145	--	3	1	45	--	17	1	130	1	8
10	--	--	--	--	--	13	--	--	51	47	--	--
11	8	124	1	12	--	106	20	27	21	116	4	18
12	3	152	--	10	1	62	12	56	86	150	5	17
13	2	107	--	3	--	52	15	31	16	109	2	5
14	5	110	--	5	2	51	13	25	53	153	7	4
15	4	154	--	1	--	29	21	32	40	125	10	9
16	--	48	--	--	--	2	--	11	3	127	2	1
17	1	98	--	--	1	3	8	9	23	117	1	4
18	2	247	--	--	5	22	19	21	70	151	6	1
19	6(1)	97	--	--	4	12	12	4	--	70	--	1
20	--	124	--	1	--	14(1)	5(2)	3	--	34	1	2
21	2	68(2)	--	--	--	22(6)	3(1)	--	--	22(4)	1	--
TOTAL	171(1)	2006 (2)	1	54	29	654 (7)	147 (3)	297	471	1903 (4)	49	129

KOK--Kokanee salmon
MWF--Mountain whitefish
CUTT--Cutthroat trout
RSS--Redside shiner
DACE--Dace species
HST--Hatchery steelhead trout
WRBT--Wild rainbow trout
SQW--Northern squawfish
SMB--Smallmouth bass
SUC--Largescale and bridgelip sucker
SCU--Sculpin species
CMC--Chiselmouth chub

Includes 17 peamouth chubs, 3 hatchery spring chinook juveniles, 17 crayfish, 4 pumpkinseed sunfish, 1 bluegill sunfish, 3 carp, 4 bull trout, 3 black crappie, and 1 rainbow/cutthroat trout hybrid captured of which none exhibited GBT.