



**KOOTENAI RIVER FISHERIES INVESTIGATIONS:
RAINBOW AND BULL TROUT RECRUITMENT**

**ANNUAL PROGRESS REPORT
April 1, 2001 – March 31, 2002**



Prepared by:

Jody P. Walters, Senior Fishery Research Biologist

**IDFG Report Number 03-34
July 2003**

Kootenai River Fisheries Investigations: Rainbow and Bull Trout Recruitment

Project Progress Report

2001 Annual Report

By

**Jody P. Walters
Senior Fishery Research Biologist**

**Idaho Department of Fish and Game
600 South Walnut Street
P.O. Box 25
Boise, ID 83707**

To

**U.S. Department of Energy
Bonneville Power Administration
Division of Fish and Wildlife
P.O. Box 3621
Portland, OR 97283-3621**

**Project Number 1988-06500
Contract Number 00004691**

**IDFG Report Number 03-34
July 2003**

TABLE OF CONTENTS

	<u>Page</u>
ABSTRACT.....	1
INTRODUCTION	2
Research Goals.....	2
Objectives.....	3
STUDY AREA.....	3
METHODS.....	5
Assessment of Rainbow and Bull Trout Recruitment	5
Characteristics of Kootenai River Fish Populations.....	10
Creel Survey.....	11
Options for Spawning Habitat Enhancement	12
RESULTS	12
Assessment of Rainbow and Bull Trout Recruitment	12
Characteristics of Kootenai River Fish Populations.....	17
Creel Survey.....	20
Options for Spawning Habitat Enhancement	21
DISCUSSION.....	21
RECOMMENDATIONS.....	23
ACKNOWLEDGEMENTS	24
LITERATURE CITED.....	25
APPENDICES.....	28

LIST OF TABLES

Table 1.	Approximate transmitter weights, duty cycles, and life expectancies for radio transmitters implanted into rainbow and bull trout in the Kootenai River, Idaho 2001.	6
Table 2.	Streams surveyed for bull trout redds, fall 2001.	6
Table 3.	Physical characteristics for bull (Bullt) and rainbow (Rbt) trout with active radio-tags in the Kootenai River, Idaho 2001.	13
Table 4.	Results of redd surveys conducted on Kootenai River tributaries in Idaho, fall 2001.	14
Table 5.	Number of age-0 rainbow trout out-migrants caught in drift nets in Kootenai River, Idaho, tributaries by stream and sample date, and the estimated total number of out-migrants for summer, 2001.	15
Table 6.	Non-target species caught in drift nets in Kootenai River tributaries, summer 2001.	16

List of Tables, continued

	<u>Page</u>
Table 7. Population estimates and densities of rainbow trout and mountain whitefish based on snorkel transects, Boulder Creek and Moyie River, Idaho August 2001.	16
Table 8. Summary of electrofishing results for the Hemlock Bar and Cow Creek reaches of the Kootenai River, Idaho September 2001.	18
Table 9. Back-calculated total length (TL, mm) and standard error (S.E.) at age for rainbow trout caught by electrofishing the Kootenai River, Idaho spring 2001.	19
Table 10. Back-calculated total length (TL, mm) and standard error (S.E.) at age for mountain whitefish caught by electrofishing the Kootenai River, Idaho, fall 2001.	19
Table 11. Mean total lengths and weights of angler caught fish, Kootenai River creel survey, March 2001-February 2002.	20

LIST OF FIGURES

Figure 1. The Kootenai River and major tributaries in Idaho and Montana (modified from Fredericks and Hendricks 1997; rkm = river kilometer).	4
Figure 2. Kootenai River mainstem and tributaries from Bonners Ferry, Idaho to Troy, Montana (rkm = river kilometer).	5
Figure 3. Mean weekly water temperatures for the Kootenai River and tributaries in Idaho, spring, summer, and fall 2001.	17

LIST OF APPENDICES

Appendix A. Telemetry locations for radio-tagged bull trout (Bullt) and rainbow trout (Rbt), Kootenai River drainage, 2001.	29
Appendix B. Fishing pressure on the Kootenai River, March 2001-February 2002.	43
Appendix C. Summary of projected harvest by species, Kootenai River creel survey, March 2001-February 2002.	46
Appendix D. Summary of catch rates, Kootenai River creel survey, March 2001-February 2002.	50
Appendix E. Estimated yield by species, Kootenai River creel survey, March 2001-February 2002.	53

ABSTRACT

Rainbow trout *Oncorhynchus mykiss* provide the most important sport fishery in the Kootenai River, Idaho, although densities and catch rates are low. Low recruitment and high exploitation are two hypotheses proposed as limiting factors to the rainbow trout population. A low-density bull trout *Salvelinus confluentus* population in the Kootenai River, Idaho is also hypothesized to be recruitment limited. The objectives of this study were to determine sources of rainbow and bull trout recruitment to the Kootenai River, Idaho, determine fish population characteristics important to management of the Kootenai River sport fishery, measure angling pressure and catch rates for the Kootenai River sport fishery, and investigate options to enhance rainbow trout spawning habitat. Seven rainbow and five bull trout were implanted with radio tags in 2001 to determine spawning locations. Movements of nine additional rainbow and six bull trout radio tagged in 1998, 1999, and 2000 were also monitored. Radio-tagged rainbow trout were located in Boulder and Debt creeks and the Moyie River, Idaho, and Callahan and Star creeks, Montana during the spawning season. Radio-tagged bull trout were located in O'Brien Creek, Montana during the spawning season. Two bull trout redds were found in Boulder Creek in fall 2001, the first documented in that stream. Drift nets were used to quantify age-0 rainbow trout out-migration to the Kootenai River from six tributaries. The out-migrant estimates were 6,520 (95% C.I. = 5,620-7,421) age-0 rainbow trout for Boulder Creek, zero for Caboose, Curley and Debt creeks, 322 (95% C.I. = 123-522) for the Moyie River, and five (95% C.I. = 1-11) for Sand Creek. Age-0 rainbow trout population estimates for August snorkel surveys were 7,734 (95% C.I. = 5,743-9,725) in Boulder Creek and 104 (95% C.I. = 46-162) in the Moyie River. Fall electrofishing catch per unit effort was highest for mountain whitefish with catches of 399 fish/h and 553 fish/h at the Hemlock Bar and Cow Creek reaches, respectively. A total of 13,815 h (95% C.I. = \pm 1,965 h) of fishing pressure was expended on the Kootenai River, Idaho in 2001. Anglers caught 0.20 rainbow trout/h and exploited 22% of the rainbow trout population (\geq 225 mm total length). The rainbow trout fishery is dependent on recruitment from Kootenai River tributaries in Idaho and Montana. Increasing access to tributary spawning habitat, spawning habitat enhancement, and removal of migration barriers may enhance rainbow trout recruitment to the Kootenai River. Conservation of Idaho's bull trout population will depend on preserving spawning habitat in O'Brien Creek, Montana.

Author:

Jody P. Walters
Senior Fishery Research Biologist

INTRODUCTION

The Kootenai River in Idaho has undergone the recent loss of several once relatively productive fisheries including white sturgeon *Acipenser transmontanus*, burbot *Lota lota*, and kokanee *Oncorhynchus nerka* (Richards 1997). The mountain whitefish *Prosopium williamsoni* population has also declined since the early 1980s (Partridge 1983; Paragamian 1995a, b; Downs 2000; Walters and Downs 2001). Although no rainbow *O. mykiss* or westslope cutthroat trout *O. clarki lewisi* population data exists prior to 1980, these populations also appear depressed based on angler catch rates. For example, Partridge (1983) estimated catch rates of 0.06 trout/h in 1982 and 1983, while Paragamian (1995a) reported catch rates of 0.03 trout/h in 1993 and 1994. In comparison, Schill (1991) summarized catch rates for a number of Idaho rivers, which ranged from 0.7 to 1.95 trout/hr. Currently, despite low densities and catch rates, rainbow trout provide the most important fishery in the Kootenai River (Paragamian 1995a).

Rainbow trout densities and standing stocks in the Kootenai River are low. Rainbow trout densities of 3, 5, 7, and 7 fish/ha (33, 45, 73, and 63 fish/km) were reported for 1993, 1994, 1998, and 1999 respectively, with standing stocks of 0.67, 1.66, 1.62, and 1.57 kg/ha for the same years (Paragamian 1995a and b; Downs 2000; Walters and Downs 2001). In comparison, rainbow trout densities in the Flower-Pipe section of the Kootenai River, Montana were 613, 407, and 800 fish/km for 1993, 1994, and 1999, respectively (J. Dunnigan, Montana Fish, Wildlife and Parks, personal communication). The low densities in Idaho are hypothesized to result from limited juvenile recruitment to the mainstem (Partridge 1983; Fredericks and Hendricks 1997). Partridge (1983) and Paragamian (1995a) suggested the rainbow trout recruitment source is primarily from tributaries. Since their work, recruitment (i.e. number of juvenile out-migrants) has been quantified from Deep and Boundary creeks, both downstream of Bonners Ferry, Idaho (Fredericks and Hendricks 1997; Downs 1999, 2000; Walters and Downs 2001). Recruits from Deep Creek migrate to Kootenay Lake, British Columbia to mature (Downs 2000) and contribute little to Idaho's fishery except when they return to Idaho to spawn. Recruitment from tributaries upstream of Bonners Ferry was first quantified in 2000 (Walters 2002).

Decreased productivity of the Kootenai River below Libby Dam (Woods 1982; Snyder and Minshall 1996) may also explain low rainbow trout densities (Paragamian 1995a). Plans are being formulated to test this hypothesis in 2003-2004. The present study will provide baseline data on the fish community for the testing of the "nutrient limitation" hypothesis.

The Columbia River basin bull trout was listed in the Federal Register as a threatened species under the Endangered Species Act on June 10, 1998. Little is known about bull trout in the Kootenai River in Idaho. Tributary surveys have documented few fish, while adults have been caught in the mainstem while sampling for other species (Partridge 1983; Paragamian 1995a and b; Walters and Downs 2001; Walters 2002). More baseline information, such as documenting additional bull trout spawning locations and recruitment sources, is important to recovery needs of this population.

Research Goals

1. Provide a management plan to improve the Kootenai River rainbow trout fishery, and
2. Develop recovery criteria for bull trout.

Objectives

1. Determine sources of rainbow and bull trout recruitment to the Idaho reach of the Kootenai River, concentrating on the reach upstream of Bonners Ferry.
2. Determine Kootenai River fish population characteristics important to management including relative species abundance, angler exploitation rate of rainbow trout, population structures and growth rates of rainbow trout and mountain whitefish, and relative weights of rainbow trout. These data will also serve as pretreatment data for the proposed nutrient enhancement of the Kootenai River (Paragamian 2000).
3. Measure angling pressure and catch and harvest rates for the Kootenai River sport fishery.
4. Investigate options for rainbow trout spawning habitat enhancement.

STUDY AREA

There are approximately 105 km of Kootenai River in Idaho with the following three distinct reaches: 1) the Canyon Reach (22 km) from the Montana border to the Moyie River, 2) the Braided Reach (10 km) from the Moyie River to Bonners Ferry, and 3) the Meandering Reach (73 km) from Bonners Ferry to the Canadian border (Fredericks and Hendricks 1997) (Figure 1). The Meandering Reach has a relatively slow velocity and substrates consisting mainly of sand, silt, and clays (Partridge 1983). Dikes on either side of the river in this reach prevent flooding of the adjacent agricultural lands. The reaches above Bonners Ferry (Braided and Canyon reaches) appear to be more suitable for fluvial rainbow trout with riffles, runs and pools, and gravel and cobble substrates. The Kootenai River in Montana upstream to Kootenai Falls is also accessible to fluvial trout. Kootenai Falls at river kilometer (rkm) 310 is a presumed migration barrier to upstream fish movement (Chapman and May 1986). Major tributaries in Montana downstream of Kootenai Falls include O'Brien and Callahan creeks (Figure 1). Work in 2001 concentrated on the Canyon Reach of the Kootenai River, Idaho and associated tributaries including Boulder, Caboose, Curley, Debt and Sand creeks, and the Moyie River (Figure 2).

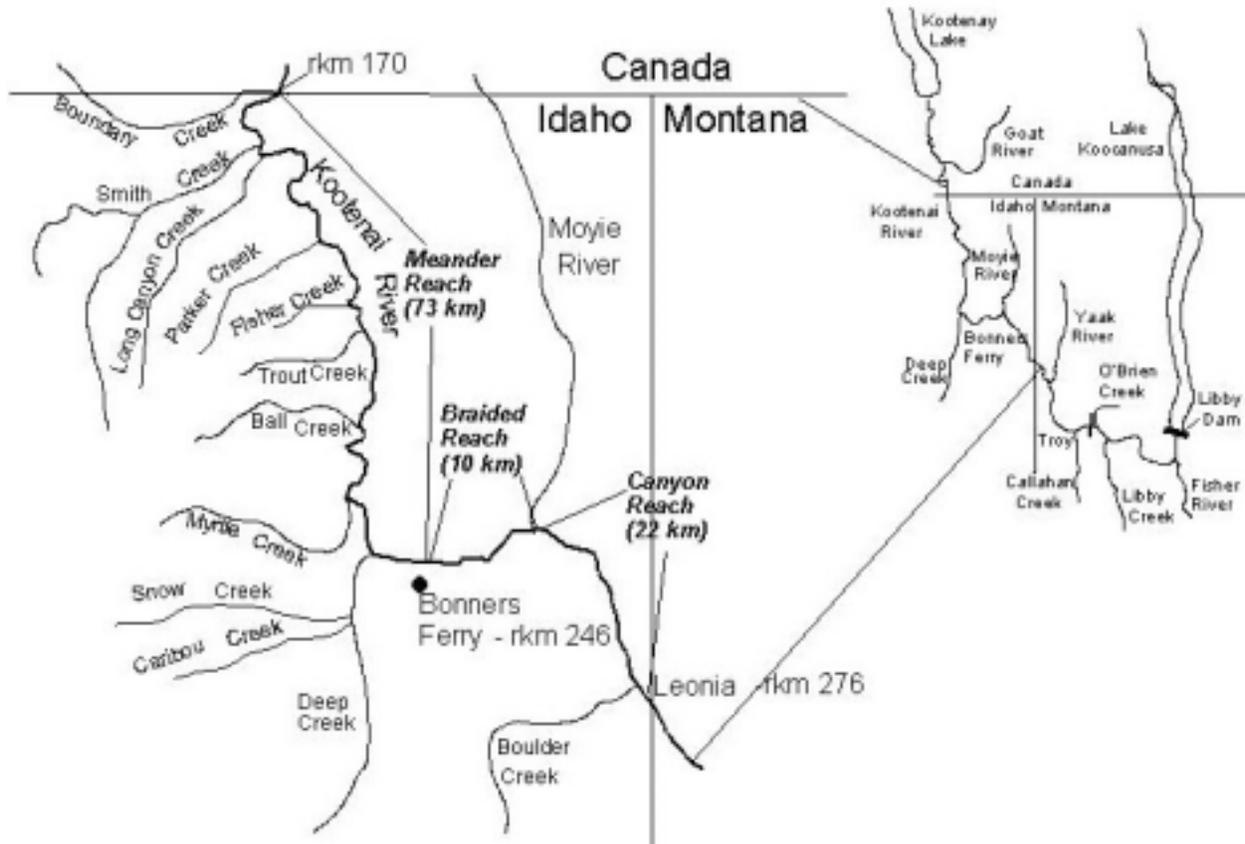


Figure 1. The Kootenai River and major tributaries in Idaho and Montana (modified from Fredericks and Hendricks 1997; rkm = river kilometer).

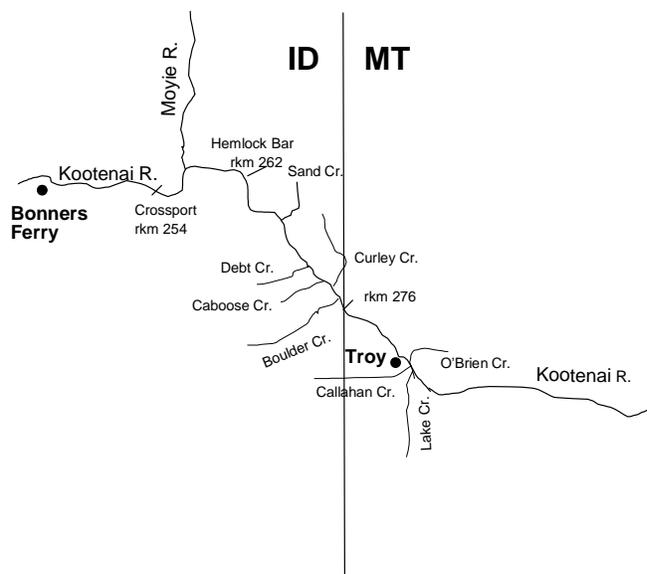


Figure 2. Kootenai River mainstem and tributaries from Bonners Ferry, Idaho to Troy, Montana (rkm = river kilometer).

METHODS

Assessment of Rainbow and Bull Trout Recruitment

Radio-telemetry and redd surveys were used to determine rainbow and bull trout spawning locations in 2001. Drift net sampling was conducted from June through August 2001 to estimate the number of age-0 rainbow trout out-migrating from tributaries to the Kootenai River. Subsequent to drift net sampling in August, snorkel surveys were conducted in tributaries to estimate the number of juvenile rainbow trout that could potentially out-migrate later. Water temperatures were also recorded in the Kootenai River mainstem and tributaries during 2001 to determine suitability for trout rearing.

Rainbow and bull trout large enough for radio tagging were collected using boat electrofishing on the Kootenai River (rkm 257-275.5) from March 21 through May 1, 2001. The electrofishing equipment used was described by Downs (2000). Rainbow and bull trout were measured to the nearest mm total length (TL) and weighed to the nearest g. Tagging protocols and surgery procedures followed Downs (2000). Individual fish were selected for radio tagging based on body weight. Radio transmitter weight could not exceed 2% of the fish's body weight in air (Winter 1996). The estimated post-spawn weight was used to determine the suitability of females for tagging (Downs 2000). Three different radio transmitter types (Advanced Telemetry

Systems, Inc.) were implanted into trout in 2001 (Table 1). All transmitters were active for 8 h and off for 16 h each day. Signals were at the rate of 40 pulses per minute (ppm). Telemetry was conducted between 0800-1600 h by fixed-wing aircraft and by boat. An attempt was made to locate radio-tagged fish at least once every month, and once every week during spawning periods. The search area included the South Arm of Kootenay Lake, British Columbia upstream to Kootenai Falls, Montana, including Idaho tributaries up to the first migration barrier. Nine rainbow trout tagged in 2000 and six bull trout tagged in 1998, 1999, and 2000 were also monitored in 2001 (Walters and Downs 2001; Walters 2002).

Table 1. Approximate transmitter weights, duty cycles, and life expectancies for radio transmitters implanted into rainbow and bull trout in the Kootenai River, Idaho 2001.

Approximate transmitter weight (g)	Duty cycle	Life expectancy (d)
7.7	90 d on, 90 d off, on ~ 160 d	250
10.4	On every day	390
20.2	On every day	690

Rainbow trout redd surveys were conducted on the mainstem Kootenai River on April 13 and 17, May 2, and June 6, 2001 from rkm 275 downstream to rkm 259. High and turbid water prevented redd surveys during the remainder of the spawning period. River areas containing nonimbedded gravel substrates were targeted. One or two observers watched for redds from the deck of a 5.2 m boat as it drifted downstream.

Bull trout redd surveys were conducted on Boulder, Caribou, Curley, and Snow creeks and the Moyie River (Table 2). Stream transects were hiked during midday to search for redds. Disturbed gravel or cobble areas showing a pit and tailspill (Grost et al. 1991) were identified as bull trout redds. Incidental sightings of kokanee and kokanee redds were also recorded. Kokanee redds were identified based on the presence of kokanee and the smaller substrates, which were mainly sand to pea-size gravel in size.

Table 2. Streams surveyed for bull trout redds, fall 2001.

Date	Stream	Begin point	End point ^a
9/25/2001	Boulder Cr.	Mouth	Approximately 100 m upstream of railroad trestle
10/3/2001	Boulder Cr.	Mouth	Falls 1.9 km upstream of mouth
10/10/2001	Boulder Cr.	Mouth	Falls 1.9 km upstream of mouth
10/23/2001	Caribou Cr.	Mouth	Old public water supply diversion 1.2 km upstream of mouth
9/14/2001	Curley Cr.	Mouth	Falls 237 m upstream of mouth
9/25/2001	Moyie R.	Mouth	Upstream end of Twin Rivers Resort Campground
10/17/01	Moyie R.	Mouth	Moyie Falls 2.4 km upstream of mouth
10/23/2001	Snow Cr.	Mouth	Falls 1.8 km upstream of mouth

^a Distances to migration barriers (falls) are taken from Partridge (1983) and Downs (2000).

Passive drift net sampling (Muth and Schmulbach 1984) was used to capture age-0 rainbow trout out-migrating from Boulder, Caboose, Curley, Debt, and Sand creeks and the Moyie River. Each net frame had a four-point bridle assembly attached, terminating in a clip.

The clip was then slipped over a piece of rebar driven into the stream bottom. Nets were fished with the net frame resting on the substrate.

Boulder, Caboose, Curley, and Debt creeks were sampled two randomly chosen nights per week from June 26 through August 6. The Moyie River and Sand Creek were sampled on two randomly chosen nights per week from July 3 through July 19. Nets were set near dusk and checked the following morning. The nets were also fished during the daytime on July 5, 12, 18, and 26 on Boulder, Caboose, and Curley creeks, and on July 4 on Debt and Sand creeks and the Moyie River. On Boulder Creek and the Moyie River, four to six nets placed at randomly selected points across a transect running perpendicular to the flow were fished each sample night. The sample transects were approximately 250 m upstream of the mouth. Two net sizes were used on Boulder Creek and the Moyie River with rectangular openings of 0.6 m X 0.7 m and 0.23 m X 0.36 m, respectively. On the remaining tributaries, one or two of the small nets were fished, because flows were minimal (often there was only enough flow to fish one net). Nets were fished within 30 m upstream of the mouth on Caboose, Curley, Debt, and Sand creeks.

Sample transects for all streams were located as close to the mouth as possible, but at locations where the stream was still confined to one or two channels deep enough to fish the drift nets. On July 15 one of the small nets was set right at the point where one of the many small channels on the Boulder Creek delta met the Kootenai River. This net was set to confirm that the age-0 rainbow trout were out-migrating to the Kootenai River.

All age-0 trout were counted and released. If fish identification was questionable, the sample or a subsample was preserved and later identified in the lab. Rainbow and cutthroat *O. clarki* trout are difficult to distinguish as fry (Carl et al. 1959; Martinez 1984). Age-0 trout that showed traits of these two species were assumed to be rainbow trout, because no cutthroat trout have been collected from these tributaries (below the migration barriers) in recent surveys (Downs 1999, 2000).

At the beginning of each sample period, depth and current velocity measurements were recorded for each transect following the United States Geological Survey (USGS) midsection method (reviewed in Orth 1983). These measurements were used to calculate total discharge. Current velocity was measured at 0.6 X depth with a Marsh-McBirney electronic flow meter. The total volume (V , m³) of water passing the sample transect during that sample period was calculated as:

$$V = Qt$$

where Q = total discharge

t = the amount of time (s) the nets were fished.

Current velocity (C) was measured at the center of the net opening if completely submerged or at 0.6 X depth if the net was not completely submerged. The volume of water filtered by each net (F_i) was calculated as:

$$F_i = ACt$$

where A = the underwater net opening area for net i .

The number of out-migrants passing the sample transect each sample date (O_s) was estimated as:

$$O_s = V \left(\frac{\sum_{i=1}^n M_i}{\sum_{i=1}^n F_i} \right)$$

where M_i = the number of out-migrants caught in net i
 n = the number of nets fished on that sample date.

The out-migration season was divided into weekly strata for each stream with two sample dates per strata. The mean number of out-migrants per night was then calculated for each strata (G_j) as:

$$G_j = \frac{\sum O_s}{n}$$

where n = the number of sample dates in strata j .

A variance (G_{jVAR}) was also calculated for each G_j . The estimated number of out-migrants for each strata (T_j) was calculated as:

$$T_j = G_j d_j$$

where d_j = the number of days in strata j .

The associated variance (T_{jVAR}) for each T_j was calculated as:

$$T_{jVAR} = G_{jVAR} d_j$$

The strata estimates (and associated variances) were then summed for a total estimate of out-migrants during the summer sample period for each stream. Ninety-five percent confidence bounds for the estimated number of age-0 rainbow trout out-migrants for each stream were calculated as:

$$Tot_i \pm 2\sqrt{Var_i}$$

Where

Tot_i = Total estimated number of age-0 rainbow trout out-migrants for stream i
 Var_i = Variance of Tot_i

Snorkel surveys were conducted on August 15 and 16 in Boulder Creek and on August 20 and 21 in the Moyie River. Snorkel surveys targeted juvenile rainbow and bull trout, but all species observed were recorded. The first snorkel transect started at a randomly selected point within the first 150 m of the stream mouth. From this start point snorkelers sampled the first 50 m interval of each subsequent 150 m of stream until a migration barrier was

reached. Depending on stream width, two or three snorkelers were used so the entire width of each 50 m transect could be surveyed. Snorkelers swam upstream while counting all fish in one direction between themselves and the adjacent snorkeler. Snorkelers nearest the shore also counted all fish between themselves and the nearest bank (Thurow 1994). The numbers and estimated sizes (nearest cm) of trout and mountain whitefish and the numbers of other species were called out to an assistant on shore.

The area of each snorkel transect was also estimated. A random start point was chosen within the first 10 m of each transect and the stream width was measured. Width measurements were then taken every 10 m for a total of five width measurements per transect. A mean width for each transect was calculated from these five measurements.

Mean densities (r , number of fish/m²) were estimated using a standard ratio estimator (Scheaffer et al. 1986:128):

$$r = \frac{\sum_{i=1}^n y_i}{\sum_{i=1}^n x_i}$$

where:

y = number of fish counted in transect i
 x = transect i area (m²)
 n = number of transects snorkeled.

Variance ($\hat{V}(r)$) of the ratio was estimated as (Scheaffer et al. 1986:128):

$$\hat{V}(r) = \hat{V}\left(\frac{\sum_{i=1}^n y_i}{\sum_{i=1}^n x_i}\right) = \left(\frac{N-n}{nN}\right)\left(\frac{1}{\mu_x^2}\right)\frac{\sum_{i=1}^n (y_i - rx_i)^2}{n-1}$$

where:

N = total number of available transects up to the first migration barrier
 μ = the mean transect area.

The population estimate ($\hat{\tau}_y$) for each species was estimated as (Scheaffer et al. 1986:131):

$$\hat{\tau}_y = \frac{\sum_{i=1}^n y_i}{\sum_{i=1}^n x_i} (\tau_x) = r \tau_x$$

where:

τ_x = Total stream area (m²).

The population variance ($\hat{V}(\hat{\tau}_y)$) was estimated as (Scheaffer et al. 1986:131):

$$\hat{V}_{\hat{\tau}_y} = (\tau_x)^2 \hat{V}(r) = \tau_x^2 \left(\frac{N-n}{nN} \right) \left(\frac{1}{\mu_x^2} \right) \frac{\sum_{i=1}^n (y_i - rx_i)^2}{n-1}$$

The 95% confidence bounds around the population estimates were calculated as:

$$\hat{\tau}_y \pm 2\sqrt{\hat{V}(\hat{\tau}_y)}$$

Separate population estimates were calculated for age-0 (≤ 75 mm TL), age-1 (76-125 mm TL), and age-2 and older (> 125 mm TL) rainbow trout. Age groups were separated based on length frequencies and previous research in the Kootenai River drainage, Idaho (Fredericks and Hendricks 1997). Correction factors (Fredericks and Hendricks 1997) were applied to the number of age-0 and age-1 rainbow trout counted, as snorkeling tends to underestimate fish numbers (Northcote and Wilkie 1963; Rodgers et al. 1992).

Optic StowAway[®] temperature data loggers were used to record water temperatures every 4 h. Data loggers were placed within 50 m of the mouth of Caboose, Curley and Debt creeks, in the Kootenai River approximately 500 m upstream from the Moyie River confluence, and in the Moyie River approximately 1 km upstream from the mouth. Data loggers were deployed on April 4, 2001 and removed on November 17, 2001, except for the Moyie River data logger that was removed on December 10, 2001. Panhandle National Forest personnel provided temperature data for Boulder Creek for April 19 through December 23, 2001.

Characteristics of Kootenai River Fish Populations

While conducting the boat electrofishing in spring 2001 described above, all rainbow trout encountered were targeted for collection. Rainbow trout were measured (TL) and weighed. Scale samples were also collected for aging and determination of growth rates.

Electrofishing catch per unit effort (CPUE) at the Hemlock Bar (September 10, 2001) and Cow Creek (September 17, 2001) reaches of the Kootenai River was used to index relative species abundance and to determine growth of mountain whitefish following methods described in Walters (2002). Rainbow trout relative weights (W_r), and proportional stock densities (PSD) were also calculated (Anderson 1976; Wege and Anderson 1978; Anderson and Neumann 1996). Relative weights were calculated for rainbow trout size groups of 201-305 mm TL and 306-406 mm TL using the standard weight (W_s) equation for lotic rainbow trout populations proposed by Simpkins and Hubert (1996). Proportional stock density was calculated for rainbow trout > 305 mm TL using 200 mm TL as stock length (Schill 1991).

Rainbow trout and mountain whitefish scales were impressed onto plastic slides and viewed on a microfiche reader at 42X. A regression of TL at capture on scale radius was used with a refined Whitney and Carlander (1956) "body proportional" method (Francis 1990) to back-calculate TL at age. The Francis (1990) method uses:

$$L_i = \left[\frac{(c + dS_i)}{c + dS_c} \right] L_c$$

where:

L_i = TL at age i

S_i = radius measurement at time of formation of the i th annulus

L_c = the TL at capture

S_c = total scale radius

c = the y-intercept from the regression equation

d = slope derived from the regression equation.

Mean length at age and annual growth increments were estimated from the back-calculation data.

To determine angler exploitation, rainbow and westslope cutthroat trout ≥ 225 mm were marked with \$10.00 reward T-bar anchor style tags. Fish were captured by electrofishing in the Kootenai River from rkm 257 (near the Moyie River confluence) upstream to the Idaho-Montana border (rkm 275.5) in March, April and May 2001. Captured fish were weighed, measured, tagged, and had a scale sample removed before being released.

Angler exploitation was quantified through angler returns of the reward tags. The reward tag program was advertised by posting signs at fishing access sites on the Kootenai River in Idaho and Montana. In addition, a press release was published in local newspapers. The same method was used to estimate angler exploitation as described in Walters (2002).

Creel Survey

A stratified random creel survey was conducted from March 1, 2001 through February 28, 2002 to provide estimates of angling effort, catch, and harvest. Estimates were made using the Creel Census System (CCS) computer program (McArthur 1992).

The one-year survey was stratified into 12 30-day intervals and a 13th interval of five days. The river was stratified into two sections with both sections sampled each creel day. Section 1 extended from the Idaho-Montana border downstream to the Highway 95 bridge at Bonners Ferry, and section 2 extended from the Highway 95 bridge downstream to Deep Creek. A previous creel survey showed that the majority of fishing pressure occurs within these two sections of the Kootenai River, Idaho (Paragamian 1995a). Four weekend days and eight weekdays were sampled each 30-day interval from March through October, while two weekend days and four weekdays were sampled November through February. Two instantaneous angler counts per section were made each creel day between sunrise and sunset, including one count prior to 13:30 h and the second count at 13:30 h or later. Instantaneous counts were conducted from shore or by boat. Counts included the number of bank anglers and the number of boats per section of river. The CCS computer program randomly selected creel days and instantaneous count times.

Anglers were interviewed by boat and at access points. Angler interviews included completed and uncompleted trips. To increase interview sample size, angler interviews were conducted on noncreel as well as creel days. Anglers were queried for their residency, amount of time spent fishing, species targeted, and the number of fish (by species) harvested and released. Interview questions are detailed in McArthur (1992). From May 29, 2001 through February 28, 2002, anglers were asked if they used two rods simultaneously, to estimate the percentage of Kootenai River fishermen taking advantage of Idaho's 2-pole stamp.

Options for Spawning Habitat Enhancement

Watershed Consulting, LLC. conducted a feasibility study for construction of a rainbow trout spawning channel on the Moyie River. The proposed site is a remnant side channel bordering private land about 500 m upstream from the mouth. The feasibility study was to determine if the site was suitable for construction of a new channel, how construction of the channel and restoration of the riparian area would be approached, and the estimated cost of construction.

Intermountain Resources, the consultant for Burlington Northern Santa Fe Railroad, was contacted regarding several possible measures to enhance spawning and recruitment from tributaries affected by railroad operations (email correspondence with Pierre Bordenave of Intermountain Resources on June 11 and July 30, 2001). These measures included 1) replacing a hanging culvert (potential vertical and velocity barrier to adult rainbow trout migrating upstream to spawn), 2) creating step-pools downstream of the hanging culvert to decrease vertical distance between the culvert and plunge pool, 3) removing deltaic deposits built up at the mouths of Caboose and Debt creeks which are potential barriers to out-migrating trout, and 4) transporting gravel to two streams to supplement the limited spawning gravel currently available.

RESULTS

Assessment of Rainbow and Bull Trout Recruitment

Twelve radio-tagged rainbow trout were monitored during the spring 2001 spawning season, including seven tagged in 2001 and five that were tagged in fall 2000 (Table 3, Appendix A). Five radio-tagged rainbow trout were documented in tributary streams during the spawning season, including Boulder and Debt creeks and the Moyie River in Idaho and Callahan and Star creeks in Montana. Four of these fish returned to the Kootenai River by June 11. The fifth fish was in Callahan Creek on May 30 but was never located again.

Twelve radio-tagged bull trout were monitored in 2001 (Table 3). Eight bull trout were monitored during the spawning season; two were tagged after the spawning season, contact was lost with one fish within a month after tagging it, and the remaining fish was a mortality or shed its tag by mid-June. Five bull trout showed movements during the spawning season including two fish that entered O'Brien Creek, Montana (Appendix A). No other radio-tagged bull trout were located in tributary streams during the spawning season.

No definite spawning activity was observed in the mainstem Kootenai River. A redd-shaped disturbance was seen on a gravel bar at rkm 266.2 on April 13, 2001, but no rainbow trout were observed. On June 6, 2001, the gravel appeared disturbed again on this same gravel bar, but no redds or fish were apparent.

Table 3. Physical characteristics for bull (Bullt) and rainbow (Rbt) trout with active radio-tags in the Kootenai River, Idaho 2001.

Species	Radio frequency	Tagging date	Tagging location (rkm)	Total length (mm)	Weight (g) ^a	Sex ^b	Age when tagged ^c	Expected tag expiration date
Bullt	30.241	9/15/1999	262.5	459	1077	u	u	9/15/2001
Bullt	30.474	10/1/1999	301.2 ^d	690	nm	u	u	4/1/2002
Bullt	30.191	10/8/1999	301.2 ^d	800	nm	m	u	10/8/2001
Bullt	30.333	10/8/1999	301.2 ^d	762	nm	f	u	4/22/2002
Bullt	30.394	10/8/1999	301.2 ^d	775	nm	m	u	4/22/2002
Bullt	30.14	9/21/2000	270.5	495	1022	u	u	8/21/2002
Bullt	30.15	10/10/2000	252.5	524	1418	u	u	9/10/2002
Bullt	30.231	3/6/2001	244.5	595	1701	u	u	12/1/2003
Bullt	31.033	3/14/2001	221.5	581	2084	u	u	11/14/2003
Bullt	30.323	3/23/2001	240	728	3206	u	u	12/23/2003
Bullt	30.08	12/14/2001	237	514	1000	u	u	11/14/2003
Bullt	31.041	12/14/2001	240.3	547	1315	u	u	9/14/2004
Rbt	30.782	4/11/2000	263	421	nm	f	u	4/11/2001
Rbt	30.09	4/21/2000	270.6	417	581	u	4	12/31/2000
Rbt	31.202	9/21/2000	270.5	361	461	u	3	8/28/2001
Rbt	31.212	9/28/2000	268.5	387	598	u	4	9/5/2001
Rbt	31.222	9/28/2000	268.5	379	525	u	4	9/5/2001
Rbt	31.262	9/28/2000	268.5	406	596	u	3	9/5/2001
Rbt	31.293	9/28/2000	266.5	384	517	u	u	9/5/2001
Rbt	31.232	10/10/2000	252.5	424	700	u	4	9/20/2001
Rbt	31.282	10/10/2000	252.5	448	759	u	4	9/20/2001
Rbt	31.253	3/21/2001	265	421	736	f	5	3/1/2002
Rbt	31.272	3/21/2001	265	366	510	u	4	3/1/2002
Rbt	31.242	3/21/2001	265	405	683	m	5	3/1/2002
Rbt	30.12	4/12/2001	268.5	560	1463	m	u	3/2/2003
Rbt	31.443	5/1/2001	272.2	396	542	u	u	4/11/2002
Rbt	31.502	5/1/2001	272.2	349	451	u	u	4/11/2002
Rbt	31.662	5/1/2001	271.5	396	635	u	u	6/1/2002

^a nm = not measured.

^b u = unknown, f = female, m = male.

^c u = unknown; rainbow trout ages were determined from scales (some could not be aged due to regenerated scales), bull trout were not aged.

^d Tagged and released in O'Brien Creek, Montana.

No bull trout were observed during fall 2001 redd surveys, but two areas of disturbed substrate in Boulder Creek were identified as bull trout redds. Each of these areas showed good redd characteristics including a pit and tailspill. Four additional areas of disturbed substrate in Boulder Creek were possible bull trout redds, but did not have obvious pits and tailspills. These four areas were more likely test digs. These disturbances were all identified as bull trout excavations due to the large disturbed areas (maximum length ≥ 1.7 m, maximum width ≥ 0.7 m), and large substrates (gravel and cobble) that were moved, relative to the kokanee redds also found in Boulder Creek (Table 4). In addition, all kokanee and kokanee redds were observed within approximately 300 m of the mouth of Boulder Creek, while the bull trout redds were approximately 1800 m from the mouth. Kokanee spawners and a kokanee redd were observed in Curley Creek, and kokanee carcasses, presumably from spawners, were found in the Moyie River (Table 4).

Table 4. Results of redd surveys conducted on Kootenai River tributaries in Idaho, fall 2001.

Stream	Date	Number of possible bull trout redds ^{a,b}	Number of bull trout seen	Number of possible kokanee redds ^a	Number of live kokanee seen	Number of kokanee carcasses
Boulder Cr.	9/25/2001	0	0	not counted	35	0
Boulder Cr.	10/3/2001	6	0	9	16	0
Boulder Cr.	10/10/2001	0	0	0	0	0
Caribou Cr.	10/23/2001	0	0	0	0	0
Curley Cr.	9/14/2001	0	0	1	5	0
Moyie R.	9/25/2001	0	0	0	0	11
Moyie R.	10/17/01	0	0	0	0	0
Snow Cr.	10/23/2001	0	0	0	0	0

^a Number of new redds since previous survey date.

^b Includes all disturbed patches of gravel and cobble substrate that appeared too large for kokanee to move.

Estimated numbers of age-0 rainbow trout out-migrating from tributary streams in summer are given in Table 5. No out-migrants were caught during daytime sampling. By July 6 and July 27 respectively, the flow in Debt Creek (0.007 m³/s) and Caboose Creek (<0.008 m³/s) was subterranean just upstream of the mouth, preventing potential out-migrants from reaching the Kootenai River. However, a drift net was fished the nights of July 6 and July 11 in Debt Creek to determine if age-0 rainbow trout were in the stream. One age-0 rainbow trout was caught on July 6, and 13 were caught on July 11. A summary of the non-target species caught in drift nets is given in Table 6.

Table 5. Number of age-0 rainbow trout out-migrants caught in drift nets in Kootenai River, Idaho, tributaries by stream and sample date, and the estimated total number of out-migrants for summer, 2001.

Stream	Sample date (night)																Estimated total number of age-0 out-migrants	Lower 95% confidence limit	Upper 95% confidence limit	
	6/26	6/28	7/3	7/4	7/5	7/6	7/7	7/11	7/12	7/14	7/15	7/17	7/18	7/19	7/24	7/26				8/6
Boulder Cr.	ns ^a	0	ns	0	ns	ns	32	ns	154	209	45 ^c	41	ns	ns	12	13	0	6,520	5,620	7,421
Caboose Cr.	0	ns	ns	0	ns	ns	0	ns	0	0	0	0	ns	ns	0	sf	sf	0	-	-
Curley Cr.	ns	0	ns	0	ns	ns	0	ns	0	0	0	0	ns	ns	0	ns	ns	0	-	-
Debt Cr.	0	ns	0	ns	ns	sf ^b	sf	sf	sf	sf	sf	sf	sf	sf	sf	sf	sf	0	-	-
Moyie R.	ns	ns	0	ns	ns	1	ns	2	ns	ns	ns	ns	ns	0	ns	ns	ns	322	123	522
Sand Cr.	ns	ns	1	ns	ns	0	ns	0	ns	ns	ns	ns	ns	0	ns	ns	ns	5	0	11

^a ns = not sampled.

^b sf = flow was subterranean at the stream mouth, preventing out-migration to the Kootenai River.

^c Includes 11 fish caught in a drift net set right at the mouth of Boulder Creek.

Table 6. Non-target species caught in drift nets in Kootenai River tributaries, summer 2001.

Species	Stream					
	Boulder Cr.	Caboose Cr.	Curley Cr.	Debt Cr.	Moyie R.	Sand Cr.
Unidentified fish-non trout (age-0)	X				X	
Rainbow Trout <i>Oncorhynchus mykiss</i> (\geq age-1)	X				X	
Brook Trout <i>Salvelinus fontinalis</i>		X				
Longnose Dace <i>Rhinichthys cataractae</i>	X		X		X	X
Redside Shiner <i>Richardsonius balteatus</i>					X	
Sculpin <i>Cottus spp.</i> (age-0)					X	
Garter Snake <i>Thamnophis spp.</i>		X				
Tailed Frog tadpoles <i>Ascaphus truei</i>		X		X		

Population estimates derived from snorkel counts and densities of rainbow trout and mountain whitefish are given in Table 7. Additional fish taxa observed while snorkeling Boulder Creek included brook trout *S. fontinalis*, longnose dace *Rhinichthys cataractae*, sucker *Catostomus spp.*, sculpin *Cottus spp.* and one bull trout (approximately 300 mm TL). Additional taxa observed while snorkeling the Moyie River included longnose dace, northern pikeminnow *Ptychocheilus oregonensis*, sucker *Catostomus spp.*, and sculpin *Cottus spp.*

Table 7. Population estimates and densities of rainbow trout and mountain whitefish based on snorkel transects, Boulder Creek and Moyie River, Idaho August 2001.

Stream	Area (m ²)	Species	Age	Population estimate	$\pm 95\%$ confidence interval	Density (n/100m ²)	$\pm 95\%$ confidence interval
Boulder Cr.	19,758	Rainbow trout	0	7,842	1,980	40	10
			1	794	215	4	1
			≥ 2	204	113	1	1
		Mountain whitefish	all ages	145	71	1	0
Moyie River	43,240	Rainbow trout	0	104	62	0	0
			1	213	129	0	0
			≥ 2	59	39	0	0
		Mountain whitefish	all ages	267	95	1	0

Mean weekly water temperatures peaked the week of August 12, but remained below 18°C for all streams surveyed except the Moyie River (Figure 3). Daily maximum temperatures (°C) were: Boulder Creek 21.5, Caboose Creek 14.4, Curley Creek 20.4, Debt Creek 13.7, Kootenai River 18.6, and Moyie River 21.2.

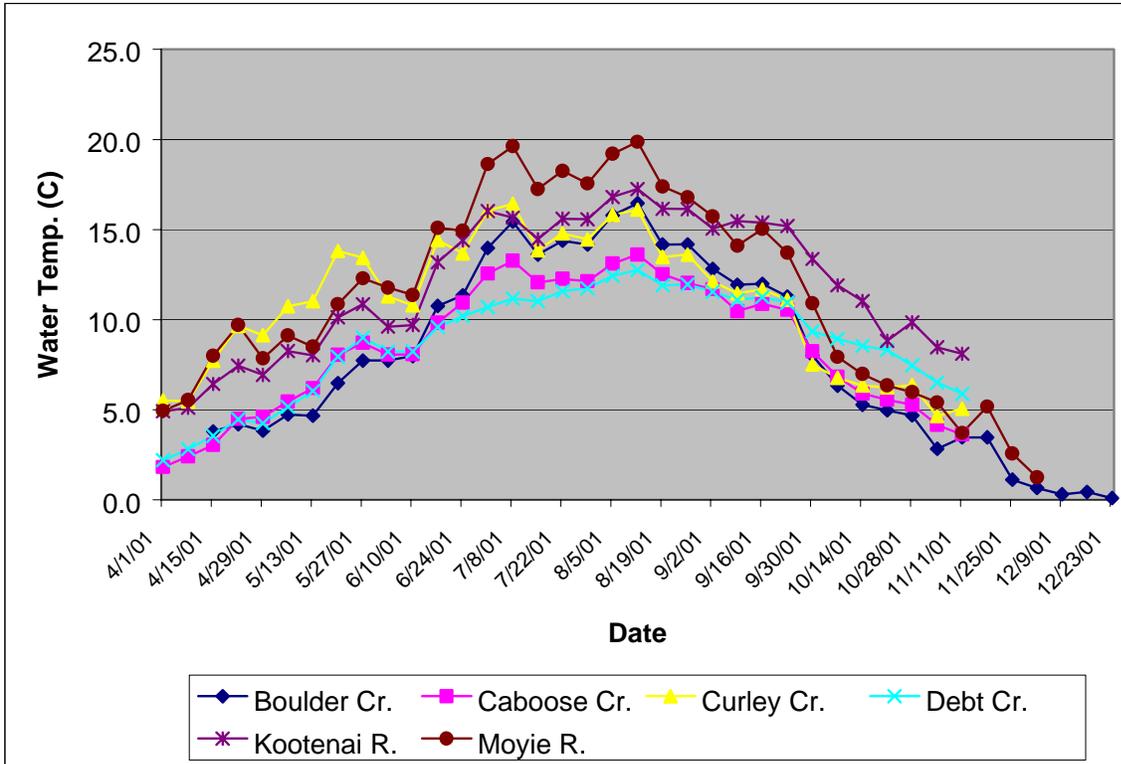


Figure 3. Mean weekly water temperatures for the Kootenai River and tributaries in Idaho, spring, summer, and fall 2001.

Characteristics of Kootenai River Fish Populations

Seven fish species were caught during fall electrofishing of the Hemlock Bar reach, and nine species were caught at the Cow Creek reach (Table 8). A total of 3,127 s (0.87 h) and 4,388 s (1.22 h) of electrofishing effort were expended at the Hemlock Bar and Cow Creek reaches, respectively. Relative weights (W_r) did not differ between rainbow trout sampled at Hemlock Bar and the Cow Creek reach (t-test; $p = 0.12$ for the 201-305 mm size group, and $p = 0.19$ for the 306-406 mm size group), so fish from those samples were combined. The relative weights for the 201-305 mm TL and 306-406 mm TL size groups were 83 (SE = 2; $n = 22$) and 80 (SE = 1; $n = 7$), respectively. The rainbow trout proportional stock density was 24%.

Rainbow trout age and growth data are shown in Table 9. The total length vs. scale radius regression equation for rainbow trout was: $Y = 4.1(X) + 48.5$ ($r^2 = 0.91$, $p < 0.001$).

Mountain whitefish age and growth data from fish sampled in fall 2001 are shown in Table 10. The total length vs. scale radius regression equation for mountain whitefish was: $Y = 2.4(X) + 44.1$ ($r^2 = 0.94$, $p < 0.001$).

Table 8. Summary of electrofishing results for the Hemlock Bar and Cow Creek reaches of the Kootenai River, Idaho September 2001.

Species	Rkm 265 (Hemlock Bar)			Rkm 251 (Cow Creek)		
	Number caught	Catch per unit effort (n/h)	Mean weight (g)	Number caught	Catch per unit effort (n/h)	Mean weight (g)
Kokanee	21	24	138	96	79	155
Mountain whitefish	347	399	107	674	553	94
Westslope cutthroat trout	0	0	0	3	2	286
Rainbow trout	18	21	176	19	16	153
Brown trout						
<i>S. trutta</i>	0	0	0	1	1	98
Bull trout	0	0	0	1	1	1018
Northern pikeminnow	9	10	184	11	9	260
Redside shiner						
<i>Richardsonius balteatus</i>	10	12	12	11	9	10
Longnose sucker						
<i>Catostomus catostomus</i>	1	1	460	0	0	0
Largescale sucker						
<i>Catostomus macrocheilus</i>	20	23	759	69	57	708

Ninety-two rainbow and two westslope cutthroat trout were marked with angler reward tags in spring 2001. Anglers reported harvesting nine tagged rainbow trout between Crossport and Boulder Creek within one year of tagging. In addition, two tagged rainbow trout were reported caught, their tags removed, then released again. When adjusting for tag loss and tag removal, the minimum annual angler exploitation rate for rainbow trout was 13%. After this rate was adjusted for non-reporting of tagged fish that were harvested, the estimated annual angler exploitation rate was 22%. An estimated 27% of the tagged rainbow trout were handled (harvested or caught and released) by anglers. One of the tagged westslope cutthroat trout was also harvested. The numbers of reward-tagged fish harvested each month were as follows: April-1, May-3, June-1, July-3, August-3, and September-1.

Table 9. Back-calculated total length (TL, mm) and standard error (S.E.) at age for rainbow trout caught by electrofishing the Kootenai River, Idaho spring 2001.

Rainbow Trout Age at Capture	n	Mean TL (mm) at Capture	S.E.	TL range at Capture		Mean back calculated total length (mm) at:												
				Min	Max	Age-1		Age-2		Age-3		Age-4		Age-5		Age-6		
						Age 1	S. E.	Age 2	S. E.	Age 3	S. E.	Age 4	S. E.	Age 5	S. E.	Age 6	S. E.	
1	17	92	3	72	111	88	3											
2	38	198	7	107	273	106	3	195	7									
3	31	246	10	152	358	105	3	169	9	246	10							
4	26	308	9	204	396	105	3	170	7	253	9	307	9					
5	10	385	9	338	421	106	4	183	11	282	13	357	10	385	9			
6	2	369	69	300	438	106	14	153	27	221	37	261	53	320	58	358	58	
				Weighted mean		103	1	179	1	253	2	318	4	374	7	358	-	
				Increment		103		77		74		65		56		-		
				Total n		124		107		69		38		12		2		

Table 10. Back-calculated total length (TL, mm) and standard error (S.E.) at age for mountain whitefish caught by electrofishing the Kootenai River, Idaho, fall 2001.

Mountain Whitefish Age at Capture	n	Mean TL (mm) at Capture	S.E.	TL range at Capture		Mean back calculated total length (mm) at:												
				Min	Max	Age-1		Age-2		Age-3		Age-4		Age-5		Age-6		Age-7
						Age-1	S. E.	Age- 2	S. E.	Age- 3	S. E.	Age- 4	S. E.	Age- 5	S. E.	Age- 6	S. E.	Age-7
0	22	110	2	90	131													
1	20	179	3	154	207	115	3											
2	19	219	4	196	254	112	3	183	4									
3	25	272	6	230	342	119	3	197	4	248	5							
4	13	297	7	260	343	117	3	192	4	247	4	280	6					
5	8	313	14	276	377	118	6	184	12	236	11	275	10	300	12			
6	5	415	7	390	429	129	6	211	3	274	7	316	6	366	8	394	7	
7	1	491	-	491	491	124	-	188	-	291	-	334	-	378	-	427	-	463
				Weighted mean		117	0	192	1	249	2	287	3	329	9	400	5	463
				Increment		117		75		58		38		42		71		63
				Total n		91		71		52		27		14		6		1

Creel Survey

A total of 301 anglers were interviewed. A total of 388 instantaneous counts were conducted on 113 sample days. The average time spent fishing per angler trip was 2.31 h based on 97 completed trip interviews. Idaho residents comprised 94% of anglers. The proportion of anglers fishing from boat and shore were 51% and 49%, respectively. Fishing methods included bait (56% of anglers), lures (30%), and fly-fishing (15%). Five percent (9/172) of anglers fished with two poles. Estimated fishing pressure for the creel year was 8,840 h (95% C.I.= \pm 1,660 h) for section 1 and 4,975 h (95% C.I.= \pm 1,051 h) for section 2, for a total of 13,815 h (95% C.I.= \pm 1,965 h). A summary of fishing pressure by section, interval, and day-type is given in Appendix B.

Rainbow trout was the most common species in the creel with a harvest of 1,882 (95% C.I.= \pm 1,209) for both river sections combined, followed by mountain whitefish with a harvest of 1,192 (95% C.I.= \pm 799). A summary of species harvest by river section and interval is given in Appendix C.

The catch composition by species as a percentage of total catch was as follows: rainbow trout 49%, mountain whitefish 31%, northern pikeminnow 7%, sucker spp. 5%, westslope cutthroat trout 4%, peamouth 3%, bull trout 1%, cutthroat-rainbow trout hybrid 1%, and brook trout 1%. Catch rates included 0.20 rainbow trout/h, 0.11 sucker spp./h, 0.08 mountain whitefish/h, 0.05 peamouth/h, and 0.03 westslope cutthroat/h for both river sections combined. Anglers who said they were fishing specifically for rainbow trout caught 0.18 rainbow trout/h, and anglers targeting mountain whitefish caught 0.02 mountain whitefish/h. A summary of catch and harvest rates by section, interval, and day-type is given in Appendix D, and yield estimates by species are summarized in Appendix E. Mean total lengths and weights of fish measured in the creel are given in Table 11.

Table 11. Mean total lengths and weights of angler caught fish, Kootenai River creel survey, March 2001-February 2002.

		Brook trout	Cutthroat-rainbow trout hybrid	Mountain whitefish	Peamouth	Rainbow trout	Sucker spp.	Westslope cutthroat trout
Total length (mm)	n	1	1	21	2	69	7	7
	Mean	259	395	329	245	314	424	287
	Standard error			15	9	8	12	29
	Minimum			222	235	174	387	225
	Maximum			485	254	520	475	454
Weight (g)	n	1	1	14	2	64	5	7
	Mean	162	450	354	105	332	706	215
	Standard error			90	25	26	71	75
	Minimum			130	80	87	570	72
	Maximum			1268	130	1116	970	644

Options for Spawning Habitat Enhancement

Watershed Consulting, LLC determined that the proposed Moyie River spawning channel concept was feasible. A report was also produced that included profiles of the remnant side channel elevations relative to the main river channel, plans for renovation of the associated dike and riparian area, and a cost estimate for the project (Watershed Consulting, LLC 2001). Subsequently, an Idaho Department of Fish and Game engineer visited the site and discovered some issues that were overlooked by the consultant. The engineer's recommendation was to first measure Moyie River elevations at the proposed spawning channel inlet and outlets during spring and summer 2002 to better estimate water availability to the site. This task will be part of 2002 work.

Efforts to gain cooperation from the Burlington Northern Santa Fe Railroad (BNSF) with enhancement work on the other tributaries were unsuccessful. Intermountain Resources indicated that BNSF did not plan to have equipment in the area to work on the perched culverts in 2001, and that the cost of replacing the culverts with a bridge would probably be cost prohibitive (P. Bordenave, Intermountain Resources, personal communication)

DISCUSSION

Movements by radio-tagged rainbow trout indicate that fish spawning in tributaries upstream of Bonners Ferry are mainly fluvial fish from the Kootenai River. There was no evidence of spawning in the Kootenai River mainstem. My documentation of radio-tagged rainbow trout ascending Debt Creek and Caboose Creek (Walters 2002) during the spring spawning season supports the importance of even intermittent streams by fluvial rainbow trout in the Kootenai River drainage. The appearance of relatively large rainbow trout in the Kootenai River in the spring (reports by anglers and personal observation) suggests that adfluvial rainbow trout from Kootenay Lake British Columbia also spawn in tributaries upstream of Bonners Ferry. An increased sample size of radio-tagged rainbow trout may help document this life history strategy.

In Idaho, Boulder Creek was the largest source of age-0 rainbow trout recruits (6,520 summer out-migrants) to the Kootenai River upstream of Bonners Ferry in 2001. The Moyie River may be an additional source of recruits as some age-0 rainbow trout were seen there during the August snorkel survey. However, the August age-0 rainbow trout population estimate for the Moyie River was only 1% of the estimate for Boulder Creek, indicating production in the Moyie River is lower. In addition, the Moyie River has almost no suitable spawning gravel (Partridge 1983; personal observation).

No age-0 rainbow trout out-migrants were documented from Caboose and Debt creeks in 2001, though these streams produced out-migrants in 2000 (Walters 2002). The perched culvert on Caboose Creek may have prevented rainbow trout spawners from reaching spawning gravels in 2001 (Partridge 1983; Downs 2000). The culvert may not be a complete barrier to upstream migration, but during some years flow dynamics could prevent adult fish from jumping up into or swimming through the culvert. Rainbow trout production occurred in Debt Creek in 2001, but the stream ran subterranean through the alluvial fan at the mouth preventing young-of-the-year from out-migrating. Fall precipitation or runoff the following spring likely raised the water level enough to reconnect the creek to the Kootenai River, allowing some fish to out-migrate. It is probable that alluvial fan aggradation has been occurring on Kootenai River tributaries in Idaho since Libby Dam began operations (K. Zelch, University of Idaho, personal

communication). Therefore, this type of barrier preventing out-migration may be a relatively new phenomenon in the drainage.

The potential contribution of even intermittent streams should not be overlooked. Erman and Hawthorne (1976) estimated that 39-47% of adult rainbow trout in Sagehen Creek, California spawned in Kiln Meadow Tributary, an intermittent stream. This stream produced at least 1,010 out-migrant age-0 rainbow trout in 1973 (Erman and Leidy 1975).

The summer out-migrant estimates should be considered a conservative estimate of overall recruitment from the tributaries sampled. As the young-of-the-year grow, they probably reach a point where they can avoid being trapped in the drift nets. Thus, the driftnet sampling could be biased resulting in an underestimate of summer out-migrants. The snorkel surveys also showed that not all age-0 rainbow trout emigrated from Boulder Creek or the Moyie River. Some of the fish remaining in the tributaries could have out-migrated from late summer through the following spring. May and Houston (1979) estimated that 4,700 young-of-year rainbow trout out-migrated from Bobtail Creek (a Kootenai River tributary in Montana) between July 28 and November 10, 1978. They reported that fish were still out-migrating when their trap froze up in early November.

Additional recruitment of rainbow trout from fish spawned in Montana is likely. This study and others have documented radio-tagged rainbow trout from Idaho that moved to tributaries in Montana during the spawning season (Downs 2000; Walters and Downs 2001). An increased sample size of radio-tagged rainbow trout may give more insight into which Montana tributaries contribute the most recruitment.

The bull trout redds found in Boulder Creek in fall 2001 are the first documented in the Kootenai River drainage in Idaho. Boulder Creek is probably not a major source of recruitment to the Kootenai River population, as spawning and rearing habitat are limited (personal observation). From the mouth up to the waterfall migration barrier, Boulder Creek is confined to a steep canyon. This results in poor retention of spawning gravels and large woody debris for rearing and resting habitat. The warm summer water temperatures in Boulder Creek (maximum of 21.5°C) may also limit bull trout recruitment. Fraley and Shepard (1989) rarely observed juvenile bull trout in streams with summer maximum temperatures exceeding 15°C.

O'Brien Creek, Montana appears to be the main source of bull trout recruitment to the Kootenai River Idaho. Most radio-tagged bull trout showing spawning migrations during this and previous studies have been located in or at the mouth of O'Brien Creek (Walters and Downs 2001; Walters 2002). There is also anecdotal evidence that fluvial bull trout spawn in the Callahan Creek drainage in Idaho (G. Johnson, Idaho Department of Fish and Game, personal communication). An increased sample size of radio-tagged fish along with redd surveys in the Callahan Creek drainage will help determine the relative importance of Callahan Creek to bull trout recruitment.

The 22% angler exploitation rate of rainbow trout in 2001 was less than half of that in 1999 (58%) and 2000 (46%) (Walters and Downs 2001; Walters 2002). However, based on the high exploitation rates for 1999 and 2000 along with limited recruitment, more conservative regulations were recommended for the trout fishery in 2001. A 16" minimum length limit and two-fish bag limit was initiated for rainbow and westslope cutthroat trout for the Kootenai River, Idaho beginning January 1, 2002. The regulations through 2001 included no size limit and a six-fish bag limit for trout. There is still no closed season for trout, and bait can still be used.

The goal of the new regulations is to conserve the trout population for continued fishing opportunities by decreasing angler exploitation, improving the population structure, and protecting trout until they can spawn at least once. The new regulations may also add insight to the nutrient limitation hypothesis. An improvement in the rainbow trout population structure (e.g., Proportional Stock Density) with a decrease in relative weights may indicate a limited food supply and evidence that the system is nutrient limited. Annual monitoring of the trout population will allow managers to assess if the new regulations are effective.

Angling pressure in 2001 ($13,815 \pm 1,965$ h) was similar to that of 1993 ($15,252 \pm 4,136$) (Paragamian 1995a). Rainbow trout catch rates were higher in 2001 when anglers caught 0.2 fish/h, and anglers targeting rainbow trout caught 0.18 fish/h. In comparison, anglers caught 0.02 rainbow trout/h in 1993, while those targeting rainbow trout caught 0.16 fish/h (Paragamian 1995a). This may explain the higher projected harvest of rainbow trout in 2001 compared to 1993. Anglers may also be more efficient on the Kootenai River now than in 1993, or better water conditions may have accounted for the higher catch rates in 2001.

The 2001 mountain whitefish harvest (1,192 fish) and catch rate (0.08 fish/h) were similar to 1993 when 1,168 mountain whitefish were harvested with a catch rate of 0.03 fish/h. The large confidence intervals (e.g. 174% and 128% of the rainbow trout harvest point estimate for 1993 and 2001, respectively) should be considered when interpreting the creel data.

A demographic change in the Kootenai River fishery since 1993 included the percent of anglers using different fishing methods. Bait anglers comprised 92% of all fishermen in 1993, with the remainder using lures (6%) or flies (2%) (IDFG unpublished data). In 2001, anglers using flies or lures made up about 45% of all fishermen while bait anglers comprised about 56%.

The rainbow trout fishery is dependent on recruitment from Kootenai River tributaries in Idaho and Montana. Increasing access to tributary spawning habitat, spawning habitat enhancement, and removal of migration barriers may enhance rainbow trout recruitment to the Kootenai River. The new trout regulations initiated in 2002 should limit angler exploitation rates and allow most trout to spawn at least once before being susceptible to harvest. Conservation of Idaho's bull trout population will depend on preserving spawning habitat in O'Brien Creek, Montana.

RECOMMENDATIONS

1. Increase the sample size of radio-tagged rainbow and bull trout to help determine if there are additional sources of recruitment (i.e. spawning tributaries) to the Idaho population.
2. Conduct bull trout redd surveys in the Callahan Creek drainage of Idaho and Montana to verify the presence of bull trout spawners.
3. Monitor the trout population annually to determine the effect of the new regulations. Parameters to monitor should include population structure, relative weights, and growth rates.
4. Measure Moyie River elevations at the proposed spawning channel inlet and outlets during spring and summer 2002 to better estimate water availability to the site.

ACKNOWLEDGEMENTS

E. Bender, E. Bratley, J. Duehr, B. Duncan, J. Erickson, C. Holderman, V. L. Paragamian, Z. Steele, and J. Szarkowski assisted with field, lab, and data entry work. Kootenai Tribe of Idaho biologists assisted with the fall electrofishing. D. Wakkinen completed telemetry flights. D. Vickaryous allowed the use of his boat launch on the Kootenai River. S. Dekome, K. Meyer, and V. L. Paragamian reviewed drafts of this report. V. L. Paragamian provided guidance throughout the study. C. Holderman took the cover photo. C. Leben prepared the report for printing.

LITERATURE CITED

- Anderson, R. O. 1976. Management of small warm water impoundments. *Fisheries* 1(6):5-7, 26-28.
- Anderson, R. O., and R. M. Neuman. 1996. Length, weight, and associated structural indices. Pages 447-482 *in* B. R. Murphy and D. W. Willis, editors. *Fisheries Techniques*, 2nd edition. American Fisheries Society, Bethesda, Maryland.
- Carl, G. C., W. A. Clemens, and C. C. Lindsey. 1959. The freshwater fishes of British Columbia. *British Columbia Provincial Museum Handbook No. 5*, 192 pp.
- Chapman, D. W., and B. May. 1986. Downstream movement of rainbow trout past Kootenai Falls, Montana. *North American Journal of Fisheries Management* 6:47-51.
- Downs, C. C. 1999. Kootenai River fisheries investigations: Rainbow trout recruitment. 1997 Annual report to Bonneville Power Administration. Project 88-65. Idaho Department of Fish and Game, Boise, Idaho.
- Downs, C. C. 2000. Kootenai River fisheries investigations: Rainbow trout recruitment. 1998 Annual report to Bonneville Power Administration. Project 88-65. Idaho Department of Fish and Game, Boise, Idaho.
- Erman, D. C., and G. R. Leidy. 1975. Downstream movement of rainbow trout fry in a tributary of Sagehen Creek, under permanent and intermittent flow. *Transactions of the American Fisheries Society* 104:467-473.
- Erman, D. C., and V. M. Hawthorne. 1976. The quantitative importance of an intermittent stream in the spawning of rainbow trout. *Transactions of the American Fisheries Society* 105:675-681.
- Fraley, J. J., and B. B. Shepard. 1989. Life history, ecology and population status of migratory bull trout *Salvelinus confluentus* in the Flathead Lake and River system, Montana. *Northwest Science* 63(4):133-143.
- Francis, R. I. C. C. 1990. Back-calculation of fish length: a critical review. *Journal of Fish Biology* 36:883-902.
- Fredericks, J., and S. Hendricks. 1997. Kootenai River fisheries investigations: Rainbow trout recruitment investigations. 1996 Annual report to Bonneville Power Administration, Project 88-65. Idaho Department of Fish and Game. Boise, Idaho.
- Grost, R. T., W. A. Hubert, and T. A. Wesche. 1991. Description of brown trout redds in a mountain stream. *Transactions of the American Fisheries Society* 120:582-588.
- Martinez, A. M. 1984. Identification of brook, brown, rainbow, and cutthroat trout larvae. *Transactions of the American Fisheries Society* 113:252-259.
- May, B., and J. Huston. 1979. Kootenai River fisheries investigations. Montana Department of Fish, Wildlife, and Parks, Fisheries Division. Final Job Report.

- McArthur, T. 1992. Statewide angler opinion and harvest surveys, creel census system. Idaho Department of Fish and Game Job Completion Report, Project No. F-71-R-14, Subproject I, Study I.
- Muth, R. T., and J. C. Schmulbach. 1984. Downstream transport of fish larvae in a shallow prairie river. *Transactions of the American Fisheries Society* 113:224-230.
- Northcote, T. G., and D. W. Wilkie. 1963. Underwater census of stream fish populations. *Transactions of the American Fisheries Society* 92:146-151.
- Orth, D. J. 1983. Aquatic habitat measurements. Pages 61-84 *in* L. A. Nielson and D. L. Johnson, editors. *Fisheries Techniques*. American Fisheries Society, Bethesda, Maryland.
- Paragamian, V. L. 1995a. Kootenai River fisheries investigation: Stock status of burbot and rainbow trout and fisheries inventory. Idaho Department of Fish and Game, 1994 Annual Report to Bonneville Power Administration, Project 88-65. Boise, Idaho.
- Paragamian, V. L. 1995b. Kootenai River fisheries investigations: Stock status of burbot and rainbow trout and fisheries inventory. Idaho Department of Fish and Game, 1995 Annual Report to Bonneville Power Administration, Project 88-65. Boise, Idaho.
- Paragamian, V. L. 2000. Kootenai River Fisheries Recovery Investigations. Proposal and work plan for 2000 prepared for Bonneville Power Administration. Idaho Department of Fish and Game. Boise, Idaho.
- Partridge, F. 1983. Kootenai River fisheries investigations. Idaho Department of Fish and Game. Job Completion Report, Project F-73-R-5. Boise, Idaho.
- Richards, D. 1997. Kootenai River biological baseline status report. Kootenai Tribe of Idaho report to Bonneville Power Administration, Project 94-49. Bonners Ferry, Idaho.
- Rodgers, J. D., M. F. Solazzi, S. L. Johnson, and M. A. Buckman. 1992. Comparison of three techniques to estimate juvenile coho salmon populations in small streams. *North American Journal of Fisheries Management* 12:79-86.
- Scheaffer, R. L., W. Mendenhall, and L. Ott. 1986. *Elementary survey sampling*. Third edition. PWS-Kent Publishing Company, Boston, Massachusetts. 324 pp.
- Schill, D. J. 1991. Wild trout investigations. Idaho Department of Fish and Game. Job Performance Report. Project F-73-R-13, Job 1. Boise, Idaho.
- Simpkins, D. G., and W. A. Hubert. 1996. Proposed revision of the standard-weight equation for rainbow trout. *Journal of Freshwater Ecology* 11:319-325.
- Snyder, E. B., and G. W. Minshall. 1996. Ecosystem metabolism and nutrient dynamics in the Kootenai River in relation to impoundment and flow enhancement for fisheries management. Final Report. Stream Ecology Center, Idaho State University. Pocatello, Idaho.

- Thurow, R. F. 1994. Underwater methods for study of salmonids in the Intermountain West. General Technical Report INT-GTR-307. Ogden, Utah: U.S. Department of Agriculture, Forest Service, Intermountain Research Station. 28 p.
- Walters, J. P. 2002. Kootenai River fisheries investigations: rainbow and bull trout recruitment. Annual progress report to Bonneville Power Administration, April 1, 2000-March 31, 2001. Project 1988-06500. Idaho Department of Fish and Game. Boise, Idaho.
- Walters, J. P., and C. C. Downs. 2001. Kootenai River fisheries investigations: rainbow and bull trout recruitment. 1999 Annual report to Bonneville Power Administration. Project 1988-06500. Idaho Department of Fish and Game. Boise, Idaho.
- Watershed Consulting, LLC. 2001. Moyie River spawning channel restoration project. Watershed Consulting, LLC. Whitefish, Montana.
- Wege, G. J., and R. O. Anderson. 1978. Relative weight (W_r): a new index of condition for largemouth bass. Pages 79-91 *in* G. D. Novinger and J. G. Dillard, editors. New approaches to the management of small impoundments. American Fisheries Society, North Central Division, Special Publication 5. Bethesda, Maryland.
- Winter, J. 1996. Advances in underwater biotelemetry. Pages 555-585 *in* Fisheries Techniques, 2nd edition. American Fisheries Society. Bethesda, Maryland.
- Whitney, R. R., and K. D. Carlander. 1956. Interpretation of body-scale regression for computing body length of fish. *Journal of Wildlife Management* 20: 21-27.
- Woods, P. F. 1982. Annual nutrient loadings, primary productivity, and trophic state of Lake Koochanusa, Montana and British Columbia, 1972-1980. Geological Survey Professional Paper 1283, United States Government Printing Office.

APPENDICES

Appendix A. Telemetry locations for radio-tagged bull trout (Bullt) and rainbow trout (Rbt), Kootenai River drainage, 2001.

Species	Total Length (mm)	Sex ^a	Radio Frequency	Transmitter Type ^b	Expected Tag		Location (rkm) ^c	Notes
					Expiration Date	Telemetry Date		
Bullt	495	u	30.140	F	8/21/2002	9/21/2000	270.5	Caboose Ck
Bullt			30.140			9/26/2000	272.3	below Curely Ck
Bullt			30.140			10/10/2000	271.5	below Curely Ck
Bullt			30.140			10/17/2000	272.6	above Curley; boat locn
Bullt			30.140			10/26/2000	271.0	below Curely Ck
Bullt			30.140			11/21/2000	271.0	below Curely Ck
Bullt			30.140			3/23/2001	272.2	below Curely Ck--boat
Bullt			30.140			3/27/2001	272.2	below Curely Ck--boat
Bullt			30.140			4/2/2001	272.1	below Curely Ck--boat
Bullt			30.140			4/9/2001	272.1	below Curely Ck--boat
Bullt			30.140			4/16/2001	271.3	below Curely Ck--boat
Bullt			30.140			4/23/2001	271.2	below Curely Ck--boat
Bullt			30.140			4/30/2001	272.2	boat
Bullt			30.140			5/2/2001	272.2	At Curley Cr.
Bullt			30.140			5/10/2001	271.5	boat
Bullt			30.140			5/13/2001	271.2	boat
Bullt			30.140			5/18/2001	271.7	below Curley Cr.
Bullt			30.140			5/21/2001	271.7	boat
Bullt			30.140			5/23/2001	271.7	aerial
Bullt			30.140			5/26/2001	271.0	boat
Bullt			30.140			5/30/2001	271.7	below Curley Cr.
Bullt			30.140			6/11/2001	271.7	below Curley Cr.
Bullt			30.140			6/20/2001	271.9	between caboose and Curley
Bullt			30.140			6/26/2001	271.5	boat
Bullt			30.140			7/5/2001		no locn-245-310
Bullt			30.140			7/11/2001		no locn-245-310
Bullt			30.140			7/18/2002		no locn 245-310
Bullt			30.140			7/25/2001		no locn-245-310
Bullt			30.140			8/1/2001	271.5	aerial
Bullt			30.140			8/8/2001		no locn 245-310
Bullt			30.140			8/29/2001		no locn 245-303
Bullt			30.140			9/7/2001		no locn
Bullt			30.140			9/24/2001		no locn
Bullt			30.140			10/3/2001	293.3	Brush Cr. (above) in KR, faint
Bullt			30.140			10/10/2001		no locn 245-305
Bullt			30.140			10/17/2001		no locn 245-310
Bullt			30.140			10/24/2001		no locn 245-305
Bullt			30.140			11/5/2001		no locn 245-305
Bullt			30.140			12/12/2001		no locn
Bullt			30.140			12/27/2001		no locn 121-303.5
Bullt	524	u	30.150	F	9/10/2002	10/10/2000	252.5	capt/rel @ lower Crossport
Bullt			30.150			11/28/2000		no locn
Bullt			30.150			3/28/2001	252.5	
Bullt			30.150			4/2/2001	262.7	boat locn
Bullt			30.150			4/11/2001	253.5	below Crossport
Bullt			30.150			4/18/2001	254.5	mid-Crossport
Bullt			30.150			4/25/2001	253.0	just above bend
Bullt			30.150			4/30/2001	256.5	boat locn
Bullt			30.150			5/2/2001	258.0	below Moyie
Bullt			30.150			5/18/2001	253.7	lower Crossport
Bullt			30.150			5/23/2001	253.7	
Bullt			30.150			5/30/2001	253.7	lower Crossport
Bullt			30.150			6/11/2001	253.7	
Bullt			30.150			6/20/2001	253.7	lower Crossport
Bullt			30.150			7/5/2001		no locn
Bullt			30.150			7/11/2001	258.0	below Moyie confl.
Bullt			30.150			7/18/2001		no locn 245-310
Bullt			30.150			8/1/2001		no locn 245-315
Bullt			30.150			8/22/2001		no locn 207-310
Bullt			30.150			8/29/2001		no locn 245-310
Bullt			30.150			9/24/2001	254.2	bend below Crossport

Appendix A, continued.

Species	Total Length (mm)	Sex ^a	Radio Frequency	Transmitter Type ^b	Expected Tag		Location (rkm) ^c	Notes
					Expiration Date	Telemetry Date		
Bullt			30.150			10/3/2001	252.5	bend below Crossport
Bullt			30.150			10/10/2001	252.5	bend below Crossport
Bullt			30.150			10/17/2001	253.0	up slightly
Bullt			30.150			10/24/2001	253.5	between bends
Bullt			30.150			11/5/2001	253.5	between bends
Bullt			30.150			12/12/2001		not located
Bullt			30.150			12/27/2001		not located rkm 121-303.5
Bullt	595	u	30.231	G	12/1/2003	3/6/2001	244.5	captured in hoop net on 3/5 at Ambush Rock; used clove oil-fish "knocked out" quick and recovered quick (within 1 min.); did well during surgery (no movement, consistent gilling); swam away-looked healthy; stitched muscle layer together (w/ Prolene), then stitched skin together. No bleeding.
Bullt			30.231			3/9/2001		not located-searched near release point only-rkm 244.5
Bullt			30.231			3/14/2001		not located
Bullt			30.231			3/22/2001		not located-searched near release point only-rkm 244.5
Bullt			30.231			3/28/2001		not located--aerial, 305-122
Bullt			30.231			4/11/2001		not located--aerial, 305-122
Bullt			30.231			4/18/2001		not located--aerial, 305-170
Bullt			30.231			4/25/2001		not located--aerial, 170-310
Bullt			30.231			5/2/2001		not located--aerial, 150-285 and Deep Cr.
Bullt			30.231			5/9/2001	132.0	near E. channel
Bullt			30.231			5/31/2001	131.5	bend below E. channel
Bullt			30.231			7/18/2001	131.5	bend below E. channel
Bullt			30.231			12/27/2001	131.8	approx. location
Bullt	581	u	31.033	G	11/14/2003	3/14/2001	221.5	Captured in hoop net on 3/12/01; approx. 15 min or so to "knock out" (used clove oil); was gilling pretty slow at start of surgery; sutured muscle layer w/dissolvable sutures, then skin layer with Prolene, some bleeding; fish recovered (l.e. trying to swim in tank) in about 3 (?) min; swam off good after release.
Bullt			31.033			3/22/2001	221.5	
Bullt			31.033			3/28/2001	228.5	lower Shorty's Is.
Bullt			31.033			4/11/2001	228.0	lower Shorty's Is.
Bullt			31.033			4/18/2001	228.3	lower Shorty's Is.
Bullt			31.033			4/25/2001	226.5	stretch above Flemming
Bullt			31.033			5/9/2001	221.0	Fischer Creek
Bullt			31.033			5/31/2001	221.0	Fisher Creek
Bullt			31.033			6/11/2001	225.0	Flemming
Bullt			31.033			6/20/2001	250.0	West of Crossport
Bullt			31.033			7/5/2001	301.2	up O'Brien ~ 0.1 km
Bullt			31.033			7/11/2001	301.2	appears to be about 800 ft up O'Brien Cr.
Bullt			31.033			7/18/2001	301.1	in KR below confl. O'Brien
Bullt			31.033			7/25/2001	301.1	in KR below confl. O'Brien
Bullt			31.033			8/1/2001	301.0	in KR below confl. O'Brien
Bullt			31.033			8/16/2001	301.0	in KR below confl. O'Brien
Bullt			31.033			8/22/2001	301.1	in KR below confl. O'Brien- good signal
Bullt			31.033			8/29/2001	301.1	in KR below confl. O'Brien- good signal
Bullt			31.033			9/7/2001	301.2	up O'Brien ~0.1 km
Bullt			31.033			9/24/2001	301.2	up O'Brien ~0.1 km
Bullt			31.033			10/3/2001	301.2	up O'Brien ~0.1 km
Bullt			31.033			10/10/2001	293.3	@ Brush Cr in KR
Bullt			31.033			10/17/2001	289.5	downstream
Bullt			31.033			10/24/2001	290.0	up slightly
Bullt			31.033			11/5/2001	290.0	same
Bullt			31.033			12/12/2001	287.5	above Yaak
Bullt			31.033			12/27/2001	289.5	

Appendix A, continued.

Species	Total Length (mm)	Sex ^a	Radio Frequency	Transmitter Type ^b	Expected Tag		Location (rkm) ^c	Notes
					Expiration Date	Telemetry Date		
Bullt	728	u	30.323	G	12/23/2003	3/23/2001	240.0	Capt 3/23/01, rel 3/24/01; took awhile to get "knocked out" but recovery was quick; one row of sutures
Bullt			30.323			3/28/2001	207.5	Lower Krausse Hole
Bullt			30.323			4/11/2001		no locn--aerial, 245-170
Bullt			30.323			4/18/2001		no locn--aerial 304-170
Bullt			30.323			4/25/2001		no locn--aerial 170-310
Bullt			30.323			5/2/2001		no locn--aerial 150-285 and Deep Cr.
Bullt			30.323			5/9/2001		no locn--aerial 245-113
Bullt			30.323			5/31/2001		no locn--aerial 245-113
Bullt			30.323			7/25/2001		not upriver
Bullt			30.323			8/1/2001		not upriver
Bullt			30.323			8/22/2001		no locn 245-207
Bullt			30.323			12/27/2001		no locn
Bullt	514	u	30.080	F	11/14/2003	12/14/2001	237.0	Caught on 12/12/01 at rkm 236.9 in hoop net; used MS-222; released in 14' of water; water temp 6
Bullt			30.080			12/15/2001	232.3	by boat at 11:45; very weak signal-approx location
Bullt			30.080			12/17/2001	219.7	by boat at rkm 220 at 11:30-couldn't keep a strong signal, reception range about 100 m; by 12:05 fish had move to rkm 219.7
Bullt			30.080			12/21/2001		not located by boat from rkm 188.5-222
Bullt			30.080			12/27/2001	184.8	aerial
Bullt			30.080			12/28/2001		no locn 150 (Creston boat ramp)-173.5; by boat
Bullt	547	u	31.041	G	9/14/2004	12/14/2001	240.3	Caught on 12/14/01 at rkm 237 in hoop net; used MS-222; released at Deep Creek; very lively when released; water temp 6
Bullt			31.041			12/15/2001		not located by boat from 230.5-244.5; a lot of interference on this frequency
Bullt			31.041			12/17/2001	222.0	by boat at 10:55, very weak signal; couldn't locate again at 12:10
Bullt			31.041			12/21/2001	211.6	by boat at 11:55
Bullt			31.041			12/27/2001		no locn 121-246 by air; a lot of interference on this frequency
Bullt			31.041			12/28/2001		no locn 150 (Creston boat ramp)-173.5; by boat
Bullt	459		30.241	D	9/15/2001	9/15/1999	262.5	capt @ Hemlock Bar
Bullt			30.241			9/17/1999	264.1	Powerline above bar
Bullt			30.241			9/21/1999	262.0	@ bend below Hemlock Bar
Bullt			30.241			9/28/1999	262.0	bend below Hemlock Bar
Bullt			30.241			10/5/1999	262.0	bend below Hemlock Bar
Bullt			30.241			10/14/1999	262.0	bend below Hemlock Bar
Bullt			30.241			10/19/1999	262.0	bend below Hemlock Bar
Bullt			30.241			10/26/1999	262.0	bend below Hemlock Bar
Bullt			30.241			11/1/1999	262.0	bend below Hemlock Bar
Bullt			30.241			11/9/1999	262.5	@ Hemlock Bar
Bullt			30.241			11/29/1999	262.5	@ Hemlock Bar
Bullt			30.241			12/14/1999	262.0	bend below Hemlock Bar
Bullt			30.241			1/18/2000	262.0	bend below Hemlock Bar
Bullt			30.241			2/15/2000	262.0	bend below Hemlock Bar
Bullt			30.241			3/21/2000	262.0	bend below Hemlock Bar
Bullt			30.241			4/11/2000	262.0	bend below Hemlock Bar
Bullt			30.241			4/24/2000	262.0	bend below Hemlock Bar
Bullt			30.241			5/2/2000	262.2	bend below Hemlock Bar
Bullt			30.241			5/9/2000	262.0	bend below Hemlock Bar
Bullt			30.241			5/16/2000	262.0	bend below Hemlock Bar
Bullt			30.241			5/23/2000	262.0	bend below Hemlock Bar
Bullt			30.241			5/30/2000	262.0	bend below Hemlock Bar
Bullt			30.241			6/6/2000	262.0	bend below Hemlock Bar
Bullt			30.241			6/13/2000	262.0	bend below Hemlock Bar
Bullt			30.241			6/20/2000	262.0	bend below Hemlock Bar
Bullt			30.241			6/28/2000	262.0	bend below Hemlock Bar

Appendix A, continued.

Species	Total Length (mm)	Sex ^a	Radio Frequency	Transmitter Type ^b	Expected Tag		Location (rkm) ^c	Notes
					Expiration Date	Telemetry Date		
Bullt			30.241			6/30/2000	262.0	bend below Hemlock Bar
Bullt			30.241			7/5/2000	262.0	bend below Hemlock Bar
Bullt			30.241			7/11/2000	276.1	above Leonia Bridge
Bullt			30.241			7/18/2000	301.2	O'Brien Ck confl-in KR
Bullt			30.241			8/1/2000	301.2	O'Brien Ck confl-in KR
Bullt			30.241			8/8/2000	301.2	O'Brien Ck confl-in KR
Bullt			30.241			8/15/2000	301.2	O'Brien Ck confl-in KR
Bullt			30.241			8/22/2000	301.2	O'Brien Ck confl-in KR
Bullt			30.241			8/29/2000	300.3	below O'Brien Ck confl
Bullt			30.241			9/5/2000	300.3	below O'Brien Ck confl
Bullt			30.241			9/12/2000	294.4	just above hwy bridge
Bullt			30.241			9/26/2000	293.2	Brush Ck, in KR
Bullt			30.241			10/10/2000	293.2	Brush Ck, in KR
Bullt			30.241			10/26/2000	293.2	Brush Ck, in KR
Bullt			30.241			11/21/2000	293.2	Brush Ck, in KR
Bullt			30.241			1/4/2001	265.0	bend below Hemlock Bar
Bullt			30.241			3/23/2001	262.0	boat
Bullt			30.241			3/27/2001	262.1	boat
Bullt			30.241			4/2/2001	262.0	boat
Bullt			30.241			4/9/2001	262.0	boat
Bullt			30.241			4/11/2001	264.5	
Bullt			30.241			4/16/2001	262.0	boat
Bullt			30.241			4/23/2001	262.0	boat
Bullt			30.241			4/30/2001	262.0	boat
Bullt			30.241			5/6/2001	262.0	boat
Bullt			30.241			5/10/2001	262.0	boat
Bullt			30.241			5/13/2001	262.0	boat
Bullt			30.241			5/18/2001	262.1	@ bend below Hemlock Bar'
Bullt			30.241			5/21/2001	262.1	boat
Bullt			30.241			5/23/2001	262.1	aerial
Bullt			30.241			5/26/2001	262.0	boat
Bullt			30.241			5/30/2001	262.1	at bend
Bullt			30.241			6/11/2001	282.0	moved upriver
Bullt			30.241			6/20/2001	301.2	O'Brien and KR
Bullt			30.241			7/5/2001	301.2	up O'Brien ~1.5 mi
Bullt			30.241			7/11/2001	301.2	up O'Brien ~2.25 mi
Bullt			30.241			7/18/2001	301.2	now about 4.1 mi up O'Brien
Bullt			30.241			7/25/2001	301.2	up O'Brien ~4.1 mi
Bullt			30.241			8/1/2001	301.2	up O'Brien ~4.1 mi
Bullt			30.241			8/1/2001	301.2	up O'Brien ~4.1 mi
Bullt			30.241			8/16/2001	301.2	up O'Brien ~4.1 mi
Bullt			30.241			8/22/2001	301.2	up O'Brien ~4.1 mi- faint
Bullt			30.241			8/29/2001	301.2	up O'Brien ~4.2 mi- faint
Bullt			30.241			9/7/2001	301.2	up O'Brien ~4.2 mi- faint
Bullt			30.241			9/24/2001	301.2	up O'Brien ~4.2 mi- faint
Bullt			30.241			10/3/2001	301.2	up O'Brien ~4.2 mi- faint
Bullt			30.241			10/10/2001	301.2	up O'Brien ~4.2 mi- faint
Bullt			30.241			10/17/2001	301.2	up O'Brien ~2 mi.- faint
Bullt			30.241			10/24/2001	301.2	up O'Brien ~1.5 mi, down slightly
Bullt			30.241			11/5/2001	301.2	Lynx Cr
Bullt			30.241			12/12/2001	301.2	up O'Brien at Lynx Cr. Confluence
Bullt			30.241			12/27/2001	301.2	up O'Brien, slightly above Lynx Cr.
Bullt	690		30.474	E	4/1/2002	10/1/1999	301.2	capt @ O'Brien
Bullt			30.474			10/5/1999	300.2	@ Lake Ck, in KR
Bullt			30.474			10/14/1999	275.1	just below Boulder Ck
Bullt			30.474			10/19/1999	258.4	just below Moyie River
Bullt			30.474			10/26/1999		not located
Bullt			30.474			11/1/1999		not located
Bullt			30.474			11/9/1999	258.6	up Moyie ~ 1/8 mi
Bullt			30.474			11/29/1999	258.6	up Moyie ~ 1/8 mi
Bullt			30.474			12/14/1999	259.0	in KR above Moyie
Bullt			30.474			1/18/2000	262.2	below Hemlock
Bullt			30.474			2/15/2000	262.2	below Hemlock
Bullt			30.474			3/21/2000	262.2	below Hemlock

Appendix A, continued.

Species	Total Length (mm)	Sex ^a	Radio Frequency	Transmitter Type ^b	Expected Tag		Location (rkm) ^c	Notes
					Expiration Date	Telemetry Date		
Bullt			30.474			4/11/2000	262.2	
Bullt			30.474			4/17/2000	259.4	
Bullt			30.474			4/24/2000	258.7	Moyie confl.
Bullt			30.474			5/2/2000	261.3	
Bullt			30.474			5/9/2000	262.0	bend below Hemlock
Bullt			30.474			5/16/2000	266.9	bend below Curley C
Bullt			30.474			5/23/2000	262.0	
Bullt			30.474			5/30/2000	258.6	@ Moyie confl.
Bullt			30.474			6/6/2000	258.6	up Moyie ~ 1/2 mi.
Bullt			30.474			6/13/2000	258.6	up Moyie ~ 1/2 mi.
Bullt			30.474			6/20/2000		no location
Bullt			30.474			6/28/2000	258.5	@ Moyie, in Kootenai
Bullt			30.474			6/30/2000	268.4	
Bullt			30.474			7/5/2000	275.5	confl. Boulder, in KR
Bullt			30.474			7/11/2000	294.6	above Hwy bridge
Bullt			30.474			7/18/2000	299.5	Callahan Ck confl
Bullt			30.474			8/1/2000	300.3	in Lake Ck, above Hwy
Bullt			30.474			8/8/2000	301.2	confl of O'Brien Ck.
Bullt			30.474			8/15/2000	301.2	confl of O'Brien Ck.
Bullt			30.474			8/22/2000	301.1	confl of O'Brien Ck.
Bullt			30.474			8/29/2000	301.1	confl of O'Brien Ck.
Bullt			30.474			9/5/2000	301.1	confl of O'Brien Ck.
Bullt			30.474			9/12/2000	300.5	below confl of O'Brien Ck.
Bullt			30.474			9/26/2000	300.5	below confl of O'Brien Ck.
Bullt			30.474			10/10/2000	300.5	below confl of O'Brien Ck.
Bullt			30.474			10/26/2000	300.5	below confl of O'Brien Ck.
Bullt			30.474			1/4/2001	285.0	bend below Yaak
Bullt			30.474			3/28/2001	287.0	above Yaak confl.
Bullt			30.474			4/11/2001	287.0	above Yaak confl.
Bullt			30.474			4/18/2001	287.5	above Yaak confl.
Bullt			30.474			4/25/2001	288.0	above Yaak
Bullt			30.474			5/18/2001	295.0	aerial-moved up
Bullt			30.474			5/23/2001	296.0	aerial-below island
Bullt			30.474			5/30/2001	297.3	aerial
Bullt			30.474			6/11/2001	297.3	aerial
Bullt			30.474			6/20/2001	301.2	O'Brien and KR
Bullt			30.474			7/5/2001	301.2	O'Brien and KR
Bullt			30.474			7/11/2001	301.2	O'Brien and KR (in KR)
Bullt			30.474			7/18/2001	301.2	O'Brien and KR (in KR)
Bullt			30.474			7/25/2001		no locn 245-310
Bullt			30.474			8/1/2001	299.8	below O'Brien
Bullt			30.474			8/1/2001	299.8	same
Bullt			30.474			8/16/2001	301.1	slightly below O'Brien
Bullt			30.474			8/22/2001	301.1	slightly below O'Brien- good signal
Bullt			30.474			8/29/2001	301.0	slightly below O'Brien- good signal
Bullt			30.474			9/7/2001	301.0	slightly below O'Brien- good signal
Bullt			30.474			9/24/2001	300.1	below O'Brien, good signal
Bullt			30.474			10/3/2001	300.1	below O'Brien, good signal
Bullt			30.474			10/10/2001	300.3	@ Lake Cr. In KR
Bullt			30.474			10/17/2001	300.4	upstream a bit
Bullt			30.474			10/24/2001	295.0	above highway
Bullt			30.474			11/5/2001	297.3	up slightly
Bullt			30.474			12/12/2001	293.0	at Brush creek
Bullt			30.474			12/27/2001	292.2	
Bullt	800	m	30.191	D	10/8/2001	10/8/1999	301.2	capt @ O'Brien
Bullt			30.191			10/14/1999	304.8	Throop Lake
Bullt			30.191			10/19/1999	305.1	Throop Lake; weak signal
Bullt			30.191			10/26/1999	305.1	Throop Lake; weak signal
Bullt			30.191			11/1/1999	305.8	upstrm from Throop L
Bullt			30.191			11/9/1999	305.8	upstrm from Throop L
Bullt			30.191			11/29/1999	304.5	Throop Lake
Bullt			30.191			12/14/1999	304.5	Throop Lake
Bullt			30.191			1/18/2000	304.7	dwnstrm end of island
Bullt			30.191			2/15/2000	304.7	dwnstrm end of island

Appendix A, continued.

Species	Total Length (mm)	Sex ^a	Radio Frequency	Transmitter Type ^b	Expected Tag		Location (rkm) ^c	Notes
					Expiration Date	Telemetry Date		
Bullt			30.191			3/21/2000	304.7	dwnstrm end of island
Bullt			30.191			4/11/2000	305.1	upstrm end of island
Bullt			30.191			4/24/2000	305.1	upstrm end of island
Bullt			30.191			5/2/2000	305.1	upstrm end of island
Bullt			30.191			5/9/2000	305.2	upstrm end of island
Bullt			30.191			5/16/2000	305.2	upstrm end of island
Bullt			30.191			5/23/2000	305.2	upstrm end of island
Bullt			30.191			5/30/2000	305.2	upstrm end of island
Bullt			30.191			6/6/2000	305.2	upstrm end of island
Bullt			30.191			6/20/2000		no location
Bullt			30.191			6/28/2000	307.5	moved into canyon
Bullt			30.191			7/5/2000	305.1	upstrm end of island
Bullt			30.191			7/11/2000	309.5	into canyon
Bullt			30.191			7/18/2000	305.1	upstrm end of island
Bullt			30.191			8/1/2000	305.1	upstrm end of island
Bullt			30.191			8/8/2000	305.1	upstrm end of island
Bullt			30.191			8/15/2000	305.1	upstrm end of island
Bullt			30.191			8/22/2000	305.1	upstrm end of island
Bullt			30.191			8/29/2000	305.1	upstrm end of island
Bullt			30.191			9/5/2000	305.1	upstrm end of island
Bullt			30.191			9/12/2000	305.1	upstrm end of island
Bullt			30.191			9/26/2000	305.1	upstrm end of island
Bullt			30.191			10/26/2000	304.7	dwnstrm end of island
Bullt			30.191			11/21/2000	304.7	dwnstrm end of island
Bullt			30.191			1/4/2001	304.7	
Bullt			30.191			3/28/2001	304.7	dwnstrm end of island
Bullt			30.191			4/11/2001	304.7	dwnstrm end of island
Bullt			30.191			4/18/2001	304.7	dwnstrm end of island
Bullt			30.191			4/25/2001	304.7	dwnstrm end of island
Bullt			30.191			5/18/2001	304.7	dwnstrm end of island
Bullt			30.191			5/30/2001	304.7	dwnstrm end of island
Bullt			30.191			6/11/2001	304.7	dwnstrm end of island
Bullt			30.191			7/5/2001	308.5	into canyon
Bullt			30.191			7/11/2001	309.7	top of K. falls
Bullt			30.191			7/18/2001	309.7	same
Bullt			30.191			7/25/2001	309.7	top of K. falls
Bullt			30.191			8/1/2001	309.7	top of K. falls
Bullt			30.191			8/8/2001	301.2	down river to confluence of O'Brien
Bullt			30.191			8/16/2001	301.1	slightly below O'Brien
Bullt			30.191			8/22/2001	301.1	slightly below O'Brien- good signal
Bullt			30.191			8/29/2001	301.0	slightly below O'Brien
Bullt			30.191			9/7/2001	301.0	slightly below O'Brien
Bullt			30.191			9/24/2001	300.1	below O'Brien, good signal
Bullt			30.191			10/3/2001	300.1	below O'Brien, good signal
Bullt			30.191			10/10/2001	300.3	@ Lake Cr
Bullt			30.191			10/17/2001	300.3	@ Lake Cr
Bullt			30.191			10/24/2001	300.3	below O'Brien, good signal
Bullt			30.191			11/5/2001	300.3	below O'Brien, good signal
Bullt			30.191			12/12/2001	303.5	moved above bend
Bullt			30.191			12/27/2001	303.5	above bend
Bullt	762	f	30.333	E	4/22/2002	10/8/1999	301.2	capt @ O'Brien
Bullt			30.333			10/14/1999	301.3	just above O'Brien Ck, in KR
Bullt			30.333			10/19/1999	302.0	bend above O'Brien, in KR
Bullt			30.333			10/26/1999	300.3	@ Lake Ck, in KR
Bullt			30.333			11/1/1999	306.0	upstrm from Throop L
Bullt			30.333			11/9/1999		not located
Bullt			30.333			11/29/1999	304.7	Throop Lake
Bullt			30.333			12/14/1999	304.7	Throop Lake
Bullt			30.333			1/18/2000	305.1	upstrm end of island
Bullt			30.333			2/15/2000	306.5	up canyon
Bullt			30.333			3/21/2000	306.5	up canyon
Bullt			30.333			4/11/2000	307.0	up canyon
Bullt			30.333			4/24/2000	307.0	up canyon
Bullt			30.333			5/2/2000	307.0	up canyon

Appendix A, continued.

Species	Total Length (mm)	Sex ^a	Radio Frequency	Transmitter Type ^b	Expected Tag		Location (rkm) ^c	Notes
					Expiration Date	Telemetry Date		
Bullt			30.333			5/9/2000	307.0	up canyon
Bullt			30.333			5/16/2000	307.2	up canyon
Bullt			30.333			5/23/2000	306.5	up canyon
Bullt			30.333			5/30/2000	306.5	up canyon
Bullt			30.333			6/6/2000	306.5	up canyon
Bullt			30.333			6/13/2000		didn't search
Bullt			30.333			6/20/2000		no location
Bullt			30.333			6/28/2000	309.5	@ base of falls
Bullt			30.333			7/5/2000	309.7	mid-falls
Bullt			30.333			7/11/2000	309.8	upper falls
Bullt			30.333			7/18/2000	309.6	upper falls
Bullt			30.333			8/1/2000	296.1	downriver to Lower Scott Is.
Bullt			30.333			8/8/2000	296.3	lower Scott Is. area
Bullt			30.333			8/15/2000	296.3	lower Scott Is. area
Bullt			30.333			8/22/2000	296.3	lower Scott Is. area
Bullt			30.333			8/29/2000	296.3	lower Scott Is. area
Bullt			30.333			9/5/2000	296.3	lower Scott Is. area
Bullt			30.333			9/12/2000	296.3	lower Scott Is. area
Bullt			30.333			9/26/2000	296.3	lower Scott Is. area
Bullt			30.333			10/10/2000	296.3	lower Scott Is. area
Bullt			30.333			10/26/2000	296.3	lower Scott Is. area
Bullt			30.333			11/21/2000	296.3	lower Scott Is. area
Bullt			30.333			1/4/2001	296.3	lower Scott Is. area
Bullt			30.333			3/28/2001	296.3	lower Scott Is. area
Bullt			30.333			4/11/2001	296.3	lower Scott Is. area
Bullt			30.333			4/18/2001	296.3	lower Scott Is. area
Bullt			30.333			4/25/2001	296.3	lower Scott Is. area
Bullt			30.333			5/30/2001	295.3	same locn-correct rkm
Bullt			30.333			6/11/2001	295.3	down river
Bullt			30.333			6/20/2001	295.3	airport
Bullt			30.333			7/5/2001	295.3	airport
Bullt			30.333			7/11/2001	295.3	same
Bullt			30.333			7/18/2001	295.3	airport
Bullt			30.333			7/25/2001	295.3	airport
Bullt			30.333			8/1/2001	295.3	airport
Bullt			30.333			8/8/2001	295.3	same
Bullt			30.333			8/16/2001	295.3	airport
Bullt			30.333			8/22/2001	295.3	airport- good signal
Bullt			30.333			8/29/2001	295.3	airport- good signal
Bullt			30.333			9/7/2001	295.3	airport- good signal
Bullt			30.333			9/24/2001	295.3	airport, good signal
Bullt			30.333			10/3/2001	295.3	airport, good signal
Bullt			30.333			10/10/2001	295.3	airport, good signal
Bullt			30.333			10/17/2001	295.3	airport, good signal
Bullt			30.333			10/24/2001	295.3	airport, good signal
Bullt			30.333			11/5/2001	295.3	airport, good signal
Bullt			30.333			12/12/2001	295.3	airport, good signal
Bullt			30.333			12/27/2001	295.3	
Bullt	775	m	30.394	E	4/22/2002	10/8/1999	301.2	O'Brien (Cranbrook, tag #0048)
Bullt			30.394			10/14/1999	301.2	O'Brien Ck., 1.15 mi up
Bullt			30.394			10/19/1999	300.5	above Lake Ck. ;in KR
Bullt			30.394			10/26/1999	299.5	@ Callhan, in KR; quiet signal
Bullt			30.394			11/1/1999	299.5	@ Callhan; in KR
Bullt			30.394			11/9/1999	299.5	@ Callhan; in KR
Bullt			30.394			11/29/1999	299.5	@ Callhan; in KR
Bullt			30.394			12/14/1999	299.5	@ Callhan; in KR
Bullt			30.394			1/18/2000	302.0	bend above Callahan
Bullt			30.394			2/15/2000	301.6	bend above Callahan
Bullt			30.394			3/21/2000	301.1	bend above Callahan
Bullt			30.394			4/11/2000	301.6	bend above Callahan
Bullt			30.394			4/24/2000	301.5	bend above Callahan
Bullt			30.394			5/2/2000	301.5	bend above Callahan
Bullt			30.394			5/9/2000	301.8	bend above Callahan
Bullt			30.394			5/16/2000	301.7	bend above Callahan

Appendix A, continued.

Species	Total Length (mm)	Sex ^a	Radio Frequency	Transmitter Type ^b	Expected Tag		Location (rkm) ^c	Notes
					Expiration Date	Telemetry Date		
Bullt			30.394			5/23/2000	301.7	bend above Callahan
Bullt			30.394			5/30/2000	301.7	bend above Callahan
Bullt			30.394			6/6/2000	301.5	bend above Callahan
Bullt			30.394			6/13/2000		didn't search
Bullt			30.394			6/20/2000	301.5	bend above Callahan
Bullt			30.394			6/28/2000	301.5	bend above Callahan
Bullt			30.394			7/5/2000	302.0	upper part of bend
Bullt			30.394			7/11/2000	302.5	above bend
Bullt			30.394			7/18/2000	302.5	above bend
Bullt			30.394			8/1/2000	302.5	above bend
Bullt			30.394			8/8/2000	302.5	above bend
Bullt			30.394			8/15/2000	302.5	above bend
Bullt			30.394			8/22/2000	302.5	above bend
Bullt			30.394			8/29/2000	302.5	above bend
Bullt			30.394			9/5/2000	302.5	above bend
Bullt			30.394			9/12/2000	302.2	above bend
Bullt			30.394			9/26/2000	302.2	above bend
Bullt			30.394			10/10/2000	302.2	above bend
Bullt			30.394			11/21/2000	302.2	above bend
Bullt			30.394			1/4/2001	302.2	above bend
Bullt			30.394			3/28/2001	302.2	above bend
Bullt			30.394			4/11/2001	302.2	above bend
Bullt			30.394			4/18/2001	302.2	above bend
Bullt			30.394			4/25/2001	302.2	above bend
Bullt			30.394			5/18/2001	302.2	above bend
Bullt			30.394			5/30/2001	302.2	upstream of bend
Bullt			30.394			6/11/2001	302.2	upstream of bend
Bullt			30.394			7/5/2001	302.2	upstream of bend
Bullt			30.394			7/11/2001	302.2	upstream of bend
Bullt			30.394			7/18/2001		no locn 245-310
Bullt			30.394			7/25/2001	302.2	upstream of bend
Bullt			30.394			8/1/2001	302.2	upstream of bend
Bullt			30.394			8/8/2001	302.2	same
Bullt			30.394			8/16/2001	302.2	upstream of bend
Bullt			30.394			8/22/2001	302.2	upstream of bend- good signal
Bullt			30.394			8/29/2001	302.2	upstream of bend- good signal
Bullt			30.394			9/7/2001	302.2	upstream of bend- good signal
Bullt			30.394			9/24/2001	302.3	upstream of bend- good signal
Bullt			30.394			10/3/2001	302.3	upstream of bend- good signal
Bullt			30.394			10/10/2001	302.3	upstream of bend- good signal
Bullt			30.394			10/17/2001	302.3	upstream of bend- good signal
Bullt			30.394			10/24/2001	302.3	upstream of bend- good signal
Bullt			30.394			11/5/2001	302.3	upstream of bend- good signal
Bullt			30.394			12/12/2001	302.3	upstream of bend- good signal
Bullt			30.394			12/27/2001	302.3	
Rbt	421	f	30.782	C	4/11/2001?	4/11/2000	263.0	Hemlock Bar
Rbt			30.782			4/17/2000	263.8	
Rbt			30.782			4/24/2000	275.3	below Boulder C
Rbt			30.782			5/2/2000	275.2	below Boulder C
Rbt			30.782			5/9/2000	275.2	below Boulder C
Rbt			30.782			5/16/2000	275.4	up Boulder ~ 1 mile
Rbt			30.782			5/23/2000	275.4	up Boulder ~ 1 mile
Rbt			30.782			5/30/2000		no location
Rbt			30.782			6/6/2000		no location
Rbt			30.782			6/13/2000		no location
Rbt			30.782			6/20/2000		no location
Rbt			30.782			6/28/2000		no location
Rbt			30.782			7/5/2000	200.5	just above Copeland
Rbt			30.782			7/11/2000	200.5	just above Copeland
Rbt			30.782			7/18/2000	200.5	just above Copeland
Rbt			30.782			8/1/2000	200.5	just above Copeland
Rbt			30.782			8/15/2000	200.5	just above Copeland
Rbt			30.782			8/22/2000	200.5	just above Copeland
Rbt			30.782			8/29/2000	200.5	just above Copeland

Appendix A, continued.

Species	Total Length (mm)	Sex ^a	Radio Frequency	Transmitter Type ^b	Expected Tag		Location (rkm) ^c	Notes
					Expiration Date	Telemetry Date		
Rbt			30.782			11/28/2000	200.5	just above Copeland
Rbt			30.782			1/4/2001	200.5	just above Copeland
Rbt			30.782			3/28/2001		no locn--may expire this April
Rbt	417		30.090	H	12/31/2000	4/21/2000	270.6	Caboose Ck
Rbt			30.090			5/2/2000	271.6	Caboose Ck
Rbt			30.090			5/9/2000	270.6	Caboose Ck
Rbt			30.090			5/16/2000	270.6	Caboose Ck
Rbt			30.090			5/23/2000	272.5	
Rbt			30.090			5/30/2000	272.0	
Rbt			30.090			6/6/2000	271.5	
Rbt			30.090			6/13/2000	271.5	
Rbt			30.090			6/28/2000	271.3	below Curley Ck.
Rbt			30.090			6/30/2000	271.5	below Curley Ck.
Rbt			30.090			7/5/2000	271.5	below Curley Ck.
Rbt			30.090			7/11/2000	271.8	below Curley Ck.
Rbt			30.090			7/18/2000	271.8	below Curley Ck.
Rbt			30.090			8/1/2000	271.4	below Curley Ck.
Rbt			30.090			8/8/2000	271.5	above Caboose Ck.
Rbt			30.090			8/15/2000	271.5	above Caboose Ck.
Rbt			30.090			8/22/2000	271.5	above Caboose Ck.
Rbt			30.090			8/29/2000	271.5	above Caboose Ck.
Rbt			30.090			9/5/2000	271.5	above Caboose Ck.
Rbt			30.090			9/12/2000	271.5	above Caboose Ck.
Rbt			30.090			9/26/2000	272.5	above Caboose Ck.
Rbt			30.090			10/10/2000	271.5	above Caboose Ck.
Rbt			30.090			10/26/2000	271.3	above Caboose Ck.
Rbt			30.090			11/21/2000	271.3	above Caboose Ck.
Rbt			30.090			1/4/2001	270.0	above Caboose Ck.
Rbt	361		31.202	H	8/28/2001	9/21/2000	270.5	capt @ Caboose Ck.; tag on @ 8:00; recap Floy tag R10285
Rbt			31.202			9/26/2000	270.5	Caboose Ck
Rbt			31.202			10/10/2000	270.5	Caboose Ck
Rbt			31.202			10/26/2000	270.7	Caboose Ck
Rbt			31.202			11/21/2000	270.7	Caboose Ck
Rbt			31.202			3/23/2001	271.0	
Rbt			31.202			3/27/2001	271.5	
Rbt			31.202			4/2/2001	271.5	
Rbt			31.202			4/9/2001	270.8	
Rbt			31.202			4/13/2001	270.6	Caboose Ck; boat locn
Rbt			31.202			4/16/2001	270.9	
Rbt			31.202			4/23/2001	270.6	
Rbt			31.202			4/30/2001	268.2	boat
Rbt			31.202			5/2/2001	272.3	At Curley Cr.
Rbt			31.202			5/6/2001	270.5	boat
Rbt			31.202			5/10/2001	270.5	boat
Rbt			31.202			5/13/2001	270.6	boat
Rbt			31.202			5/18/2001	268.5	aerial-Debt Cr.-up creek 100 yds.
Rbt			31.202			5/21/2001	268.5	boat
Rbt			31.202			5/23/2001	268.5	aerial-Debt Cr.-up creek 100 yds.
Rbt			31.202			5/26/2001	268.4	boat, poss. up Debt Cr. on 5/18 to 5/23
Rbt			31.202			5/31/2001	268.4	confl. Debt. Cr. in KR
Rbt			31.202			6/11/2001	270.6	confl. Caboose
Rbt			31.202			6/20/2001	271.9	between caboose and Curley
Rbt			31.202			6/26/2001	271.5	boat
Rbt			31.202			7/5/2001	271.9	between caboose and Curley
Rbt			31.202			7/11/2001	270.5	below caboose
Rbt			31.202			7/25/2001	270.7	above caboose
Rbt			31.202			8/1/2001	270.7	above caboose
Rbt			31.202			8/8/2001		no locn 245-310
Rbt			31.202			8/22/2001	270.7	above caboose- faint
Rbt			31.202			8/28/2001		EXPIRED

Appendix A, continued.

Species	Total Length (mm)	Sex ^a	Radio Frequency	Transmitter Type ^b	Expected Tag		Location (rkm) ^c	Notes
					Expiration Date	Telemetry Date		
Rbt	387		31.212	H	9/5/2001	9/28/2000	268.5	capture; recap Floy tag R10494
Rbt		10/17/2000				269.0	Debt Creek (boat locn)	
Rbt		11/1/2000				269.0	Debt Creek (boat locn)	
Rbt		11/21/2000				269.0	Debt Creek	
Rbt		3/28/2001					not located--245-310 aerial	
Rbt		4/11/2001					not located--245-310 aerial	
Rbt		4/18/2001				274.5	below Boulder	
Rbt		4/23/2001				275.2	boat	
Rbt		4/30/2001				275.3	boat	
Rbt		5/6/2001				275.2	boat	
Rbt		5/10/2001				275.2	boat	
Rbt		5/13/2001				275.2	boat	
Rbt		5/18/2001				275.2	aerial	
Rbt		5/23/2001				271.5	aerial-below Curley	
Rbt		5/30/2001				285.6	up Star Cr. (.5 mile)	
Rbt		6/11/2001				275.5	below Boulder	
Rbt		6/20/2001				275.5	below Boulder	
Rbt		6/26/2001				268.3	boat	
Rbt		7/5/2001				268.0	below debt Cr.	
Rbt		7/11/2001				267.5	below debt Cr.	
Rbt		7/25/2001				267.5	below debt Cr.	
Rbt		8/1/2001				267.5	below debt Cr.	
Rbt		8/16/2001				267.5	below debt Cr.	
Rbt	8/22/2001	267.5	below debt Cr.- faint					
Rbt	31.212		9/5/2001		EXPIRED			
Rbt	379		31.222	H	9/5/2001	9/28/2000	268.5	capture
Rbt		10/17/2000				268.5	Debt Creek (boat locn)	
Rbt		10/26/2000				268.5	Debt Creek	
Rbt		11/21/2000				268.5	Debt Creek	
Rbt		3/28/2001				268.9		
Rbt		4/2/2001				268.5		
Rbt		4/11/2001				275.3	below Boulder Creek	
Rbt		4/18/2001				275.3	up Boulder Cr., just below 1st falls	
Rbt		4/23/2001				272.5		
Rbt		4/30/2001				272.2	boat	
Rbt		5/6/2001				272.2	boat	
Rbt		5/18/2001				272.1	aerial- @Curley	
Rbt		5/21/2001				272.1	boat	
Rbt		5/23/2001				272.2	aerial	
Rbt		5/26/2001				272.1	boat	
Rbt		5/30/2001				272.1	Curley	
Rbt		6/11/2001				272.0	near Curley	
Rbt		6/20/2001				272.0	near Curley	
Rbt		6/26/2001				272.5	boat-near Curley	
Rbt		7/5/2001				272.0	near Curley	
Rbt		7/11/2001				272.2	at curley	
Rbt		7/25/2001				272.2	at curley	
Rbt		8/8/2001				272.2	same	
Rbt		8/16/2001				272.2	at curley	
Rbt		8/22/2001				272.2	at curley - good signal	
Rbt		8/29/2001				272.1	at curley - good signal	
Rbt		9/5/2001					EXPIRED?	
Rbt		9/7/2001				272.1	at curley - good signal	
Rbt		9/24/2001				271.5	below Curley, good signal	
Rbt		10/3/2001				271.7	up a bit	
Rbt		10/10/2001				271.7	below Curley, good signal	
Rbt		10/17/2001				271.7	below Curley, good signal	
Rbt		10/24/2001				273.0	up slightly	
Rbt	11/5/2001	277.6	above Boulder Cr					
Rbt	31.222		12/12/2001		not located			
Rbt	31.222		12/27/2001		not located-assume tag dead			

Appendix A, continued.

Species	Total Length (mm)	Sex ^a	Radio Frequency	Transmitter Type ^b	Expected Tag		Location (rkm) ^c	Notes
					Expiration Date	Telemetry Date		
Rbt	406		31.262	H	9/5/2001	9/28/2000	268.5	capture; tag on @ 7:35; recap Floy tag R10485
Rbt		10/17/2000				268.5	Debt Cr. (boat locn)	
Rbt		10/26/2000				268.4	Debt Cr.	
Rbt		10/31/2000				268.5	Debt Cr. (boat locn)	
Rbt		11/21/2000				268.9	Debt Cr.	
Rbt		3/28/2001				269.0		
Rbt		4/2/2001				268.3	boat	
Rbt		4/9/2001				268.2	boat	
Rbt		4/16/2001				267.5		
Rbt		4/25/2001				268.5	At Debt Cr.	
Rbt		5/2/2001					No locn from 180-285 or Deep Cr.	
Rbt		5/18/2001					no locn from 245-310	
Rbt		5/23/2001					no locn from 240.5-302	
Rbt		5/31/2001					no locn from 245-305 or tribs	
Rbt		6/11/2001					no locn from 214-305	
Rbt		7/11/2001					no locn from 245-310	
Rbt		7/25/2001					no locn from 245-310	
Rbt		8/1/2001					no locn from 245-315	
Rbt	8/29/2001		no locn 245-310					
Rbt	9/5/2001		EXPIRED					
Rbt	384		31.293	H	9/5/2001	9/28/2000	266.5	capture; tag on @ 7:35
Rbt		10/17/2000				267.3	boat locn	
Rbt		10/26/2000				267.0	bend below Debt Cr.	
Rbt		11/21/2000				267.0	bend below Debt Cr.	
Rbt		3/28/2001				267.0	bend below Debt Cr.	
Rbt		4/2/2001				266.9		
Rbt		4/9/2001				267.1	bend below Debt Cr.	
Rbt		4/16/2001				266.6		
Rbt		4/23/2001				266.6	boat locn	
Rbt		4/25/2001				266.6		
Rbt		4/30/2001				266.5	boat locn	
Rbt		5/6/2001				266.5	boat locn	
Rbt		5/18/2001				266.6	aerial-near bend	
Rbt		5/21/2001				266.6	boat locn	
Rbt		5/23/2001				266.6	aerial-near bend	
Rbt		5/26/2001				266.5	boat locn	
Rbt		5/30/2001				266.6		
Rbt		6/11/2001				266.6	1 mile above mouth of Moyie	
Rbt	6/20/2001	266.6	HARVESTED 1 mi. upstream mouth of Moyie					
Rbt	424		31.232	H	9/20/2001	10/10/2000	252.5	capt/rel @ lower Crossport; some bleeding, slow recovery
Rbt		10/17/2000				252.2	lower Crossport (boat locn)	
Rbt		10/26/2000				253.3	lower Crossport	
Rbt		11/1/2000				253.5	lower Crossport (boat locn)	
Rbt		11/21/2000				253.5	lower Crossport	
Rbt		1/4/2001				252.7	bend below Crossport	
Rbt		3/28/2001					not located--not on yet?	
Rbt		4/11/2001				252.7	below Crossport	
Rbt		4/18/2001				252.7	below Crossport	
Rbt		4/25/2001				252.7	below Crossport	
Rbt		5/2/2001				252.7	lower Crossport	
Rbt		5/18/2001				252.7	aerial-bend before Crossport	
Rbt		5/23/2001				252.7		
Rbt		5/31/2001				252.7	aerial-bend below Crossport	
Rbt		6/11/2001				252.7		
Rbt		6/20/2001				252.7	bend below Crossport	
Rbt		7/5/2001				253.5	mid-Crossport	
Rbt		7/11/2001				253.5	mid-Crossport	
Rbt		7/25/2001				253.5	mid-Crossport	
Rbt		8/1/2001				253.5	mid-Crossport	
Rbt	8/22/2001		no locn 207-310					
Rbt	8/29/2001		no locn					

Appendix A, continued.

Species	Total Length (mm)	Sex ^a	Radio Frequency	Transmitter Type ^b	Expected Tag		Location (rkm) ^c	Notes
					Expiration Date	Telemetry Date		
Rbt	448		31.282	H	9/20/2001	10/10/2000	252.5	capt/rel @ lower Crossport, open incision got submerged
Rbt			31.282			11/28/2000	244.6	above Ambush Rock
Rbt			31.282			1/4/2001	231.4	mid-Shorty's Island
Rbt			31.282			3/28/2001		not located--not on yet?
Rbt			31.282			4/11/2001	237.4	mid-Refuge
Rbt			31.282			4/18/2001	214.0	below Rock Creek
Rbt			31.282			4/25/2001		not located from 214-200
Rbt			31.282			5/2/2001	214.0	faint
Rbt			31.282			5/9/2001		no locn from 245-113
Rbt			31.282			5/18/2001		no locn from 245-310
Rbt			31.282			5/23/2001		no locn from 240.5-302 or tribs
Rbt			31.282			5/31/2001		no locn from 240.5-302
Rbt			31.282			6/11/2001		no locn from 214-216, 245-305
Rbt			31.282			8/22/2001		no locn from 245-207
Rbt			31.282			12/27/2001		assume tag dead
Rbt	421	f	31.253	H	3/1/2002	3/21/2001	265.0	capt/rel @ Hemlock
Rbt			31.253			3/23/2001	260.4	boat
Rbt			31.253			3/27/2001	260.0	boat
Rbt			31.253			4/2/2001	259.5	boat
Rbt			31.253			4/9/2001	258.6	boat
Rbt			31.253			4/16/2001		boat-not located from Crossport to Boulder Creek
Rbt			31.253			4/22/2001	258.6	up Moyie River beneath highway bridge
Rbt			31.253			5/2/2001	257.3	
Rbt			31.253			5/6/2001	256.3	boat
Rbt			31.253			5/18/2001	256.3	aerial-above bend
Rbt			31.253			5/21/2001	256.3	boat
Rbt			31.253			5/23/2001	256.3	
Rbt			31.253			5/26/2001	256.3	boat
Rbt			31.253			5/30/2001	256.3	above bend upstrm Crossport
Rbt			31.253			6/11/2001	256.0	down 0.3 rkm
Rbt			31.253			6/21/2001		OFF until 9/21/01
Rbt			31.253			7/5/2001		no locn
Rbt			31.253			9/24/2001	257.5	bend above Crossport
Rbt			31.253			10/3/2001	256.0	@ bend, down a bit
Rbt			31.253			10/10/2001	256.0	bend above Crossport
Rbt			31.253			10/17/2001	257.5	upstream
Rbt			31.253			10/24/2001	257.3	upstream
Rbt			31.253			11/5/2001	257.3	same
Rbt			31.253			12/12/2001	257.3	bend above Crossport
Rbt			31.253			12/27/2001	256.3	
Rbt	366	U	31.272	H	3/1/2002	3/21/2001	265.0	capt/rel @ Hemlock; used staples to close incision
Rbt			31.272			3/23/2001	265.4	boat locn
Rbt			31.272			3/27/2001	264.9	boat locn
Rbt			31.272			4/2/2001		
Rbt			31.272			4/9/2001	264.8	boat locn
Rbt			31.272			4/18/2001	264.8	
Rbt			31.272			4/23/2001	274.2	boat locn
Rbt			31.272			5/2/2001		Not located
Rbt			31.272			5/9/2001		aerial-not downriver 245-113
Rbt			31.272			5/18/2001	285.5	
Rbt			31.272			5/23/2001	285.2	aerial
Rbt			31.272			5/30/2001	285.6	Star Cr. confl. In KR
Rbt			31.272			6/11/2001	265.0	Hemlock reach
Rbt			31.272			6/21/2001		OFF until 9/21/01
Rbt			31.272			9/24/2001	264.1	Hemlock reach, quiet
Rbt			31.272			10/3/2001	263.5	ON 9/21/01
Rbt			31.272			10/10/2001	263.5	hemlock reach
Rbt			31.272			10/17/2001	263.5	hemlock reach
Rbt			31.272			10/24/2001	264.0	upstream
Rbt			31.272			11/5/2001	264.0	same

Appendix A, continued.

Species	Total Length (mm)	Sex ^a	Radio Frequency	Transmitter Type ^b	Expected Tag		Location (rkm) ^c	Notes	
					Expiration Date	Telemetry Date			
Rbt			31.272				12/12/2001	264.0	Hemlock reach
Rbt			31.272				12/27/2001	264.1	
Rbt	405	m	31.242	H	3/1/2002	3/21/2001	265.0	264.5	capt/rel @ Hemlock
Rbt			31.242			3/23/2001	264.5		
Rbt			31.242			3/27/2001	264.3		
Rbt			31.242			4/2/2001	264.5		
Rbt			31.242			4/11/2001	264.5		below Hemlock
Rbt			31.242			4/18/2001	264.5		
Rbt			31.242			4/25/2001	273.0		above Curley Cr.
Rbt			31.242			4/30/2001	275.3		boat
Rbt			31.242			5/2/2001	275.2		down to Hemlock beach (lower) Powerline
Rbt			31.242			5/18/2001	264.2		aerial
Rbt			31.242			5/21/2001	264.2		boat
Rbt			31.242			5/23/2001	264.2		aerial
Rbt			31.242			5/26/2001	264.6		boat
Rbt			31.242			5/30/2001	264.1		Hemlock reach
Rbt			31.242			6/11/2001	264.1		Hemlock reach
Rbt			31.242			8/21/2001			HARVESTED 2.5 to 3.0 miles upstream from Moyie R.
Rbt	560	m	30.120	F	3/2/2003	4/12/2001	268.5		caught between Caboose and Debt Creek-released at Debt Cr; got water in incision during surgery; dissolvable sutures used; hooked jaw, looked like testes seen through incision
Rbt			30.120			4/13/2001	267.1		boat
Rbt			30.120			4/16/2001	268.2		boat
Rbt			30.120			4/23/2001	269.6		boat
Rbt			30.120			5/2/2001			Not located 150-285 or Deep Cr.
Rbt			30.120			5/9/2001			aerial-not downriver 285-113
Rbt			30.120			5/18/2001	299.5		aerial-@Callahan Cr.
Rbt			30.120			5/23/2001	299.5		aerial-up Callahan
Rbt			30.120			5/30/2001	299.5		aerial-up Callahan @ Hwy
Rbt			30.120			6/11/2001			no locn from 214-305
Rbt			30.120			7/11/2001			no locn from 245-310
Rbt			30.120			7/25/2001			no locn from 245-310
Rbt			30.120			8/1/2001			no locn from 245-315
Rbt			30.120			8/8/2001			no locn from 245-310
Rbt			30.120			8/16/2001			no locn from 245-310
Rbt			30.120			8/22/2001			no locn 207-310
Rbt			30.120			8/29/2001			no locn 245-310
Rbt			30.120			9/7/2001			no locn 245-310
Rbt			30.120			9/24/2001			no locn 245-310
Rbt			30.120			10/3/2001			no locn 245-305
Rbt			30.120			10/10/2001			no locn 245-305
Rbt			30.120			10/17/2001			no locn 245-310
Rbt			30.120			10/24/2001			no locn 245-305
Rbt			30.120			11/5/2001			no locn 245-305
Rbt			30.120			12/27/2001			no locn 121-303.5
Rbt	396	u	31.443	A	4/11/2002	5/1/2001	272.2		tagged and released at Curley Cr.
Rbt			31.443			5/2/2001	272.1		boat locn-not real accurate locn, weak signal
Rbt			31.443			5/10/2001	272.2		boat
Rbt			31.443			5/13/2001	272.0		boat
Rbt			31.443			5/18/2001	272.0		aerial-below Curley
Rbt			31.443			5/21/2001	270.5		boat
Rbt			31.443			5/23/2001			aerial-no locn-245-302
Rbt			31.443			5/26/2001	272.2		boat
Rbt			31.443			5/30/2001	272.2		boat
Rbt			31.443			6/11/2001	272.0		down river
Rbt			31.443			6/20/2001	272.2		at Curley
Rbt			31.443			6/26/2001	272.5		
Rbt			31.443			7/5/2001	272.2		at Curley
Rbt			31.443			7/11/2001	272.2		at Curley
Rbt			31.443			7/25/2001	272.2		at Curley

Appendix A, continued.

Species	Total Length (mm)	Sex ^a	Radio Frequency	Transmitter Type ^b	Expected Tag		Location (rkm) ^c	Notes
					Expiration Date	Telemetry Date		
Rbt			31.443				8/1/2001	OFF until 11/01/01
Rbt			31.443				9/8/2001	272.2 Harvested at mouth of Curley Cr. Rkm 272.2
Rbt	349	u	31.502	A	4/11/2002	5/1/2001	272.2	tagged and released at Curley Cr; took 45 min to recover from surgery.
Rbt			31.502			5/2/2001	272.1	boat locn
Rbt			31.502			5/18/2001	271.5	aerial-below Curley
Rbt			31.502			5/21/2001	271.5	boat locn
Rbt			31.502			5/23/2001	272.0	aerial
Rbt			31.502			5/26/2001	271.6	boat locn
Rbt			31.502			5/30/2001	271.6	below Curley
Rbt			31.502			6/11/2001	271.6	below Curley
Rbt			31.502			6/20/2001	271.6	below Curley
Rbt			31.502			6/26/2001	271.5	boat locn
Rbt			31.502			7/5/2001	271.6	below Curley
Rbt			31.502			7/11/2001	270.7	below Curley
Rbt			31.502			7/25/2001	271.0	below Curley
Rbt			31.502			8/1/2001		OFF until 11/01/01
Rbt			31.502			10/3/2001		OFF until 11/01/01
Rbt			31.502			11/5/2001	271.5	ON
Rbt			31.502			12/12/2001	271.5	
Rbt			31.502			12/27/2001	271.5	
Rbt	396	u	31.662	J	6/1/2002	5/1/2001	271.5	tagged and released at Caboose Cr; took 45 min to recover from surgery;
Rbt			31.662			5/2/2001	271.4	boat locn
Rbt			31.662			5/6/2001	270.6	boat locn
Rbt			31.662			5/10/2001	270.6	boat locn
Rbt			31.662			5/13/2001	270.8	boat locn
Rbt			31.662			5/18/2001	270.5	aerial-below Caboose
Rbt			31.662			5/21/2001	270.5	boat locn
Rbt			31.662			5/23/2001	270.7	aerial-above caboose
Rbt			31.662			5/26/2001	270.7	boat locn
Rbt			31.662			5/30/2001	270.7	below caboose Cr.
Rbt			31.662			6/11/2001	270.7	below caboose Cr.
Rbt			31.662			6/20/2001	271.6	at caboose Cr.
Rbt			31.662			6/26/2001	270.0	boat locn
Rbt			31.662			7/5/2001	270.6	at caboose Cr.
Rbt			31.662			7/11/2001	270.6	at caboose Cr.
Rbt			31.662			7/25/2001	270.6	at caboose Cr.
Rbt			31.662			8/1/2001	270.6	at caboose Cr.
Rbt			31.662			8/8/2001	270.6	same
Rbt			31.662			8/16/2001	270.6	at caboose Cr.
Rbt			31.662			8/22/2001	270.6	at caboose Cr.- good signal
Rbt			31.662			8/29/2001	270.6	at caboose Cr.- good signal
Rbt			31.662			9/7/2001	270.6	at caboose Cr.- good signal
Rbt			31.662			9/24/2001	270.6	at caboose Cr.- good signal
Rbt			31.662			10/3/2001	270.6	at caboose Cr.- good signal
Rbt			31.662			10/10/2001	270.6	at caboose Cr.- good signal
Rbt			31.662			10/17/2001	270.0	downstream
Rbt			31.662			10/24/2001	270.6	up slightly
Rbt			31.662			11/5/2001	270.6	same
Rbt			31.662			12/12/2001	270.6	above Caboose; good signal
Rbt			31.662			12/27/2001	270.6	

^a For sex: m = male, f = female, u = unknown

^b A = tag wt 7.35-8.2 g, 90 on/90 off/160 on duty cycle, life of 250 d; C = tag wt 10-11 g, life of 360 d; D = tag wt 18.36-18.81 g, life of 730 d; E = tag wt 25.1-25.31 g, life of 912 d; F = tag wt 20.2 g, life of 690 d; G = tag wt 25.1 g, life of 1000 d; H = tag wt 7.8 g, 90 d on/90 d off/ on until tag dead, life of 250 d; J = tag wt 10.4 g, life of 360 d

^c The first location listed for each fish is the release location.

Appendix B. Fishing pressure on the Kootenai River, March 2001-February 2002.

**IDFG Creel Survey System
Pressure Report By Interval And Day Type Summary**

Body Of Water: Kootenai River Year: 2001

Section	Interval	Day Type	Boat Anglers Hours	Bank Anglers Hours	Tube Anglers Hours	Ice Anglers Hours	Total Anglers Hours
1	1	Weekday	231	264	0	0	495
		Weekend	144	192	0	0	336
	Interval +/- at	1 totals: 95% C.I.:	375 305	456 240	0 0	0 0	831 389
1	2	Weekday	108	216	0	0	324
		Weekend	84	203	17	0	304
	Interval +/- at	2 totals: 95% C.I.:	192 179	419 372	17 34	0 0	628 414
1	3	Weekday	59	148	0	0	207
		Weekend	720	120	0	0	840
	Interval +/- at	3 totals: 95% C.I.:	779 551	268 205	0 0	0 0	1047 588
1	4	Weekday	81	244	0	0	325
		Weekend	64	112	0	0	176
	Interval +/- at	4 totals: 95% C.I.:	145 98	356 305	0 0	0 0	501 320
1	5	Weekday	966	143	0	0	1109
		Weekend	1256	129	0	0	1385
	Interval +/- at	5 totals: 95% C.I.:	2222 883	272 230	0 0	0 0	2494 913
1	6	Weekday	742	228	0	0	971
		Weekend	473	65	0	0	538
	Interval +/- at	6 totals: 95% C.I.:	1215 847	293 235	0 0	0 0	1509 879
1	7	Weekday	433	72	0	0	504
		Weekend	981	98	0	0	1079
	Interval +/- at	7 totals: 95% C.I.:	1414 577	170 117	0 0	0 0	1583 588

Appendix B, continued.

Section	Interval	Day Type	Boat Anglers Hours	Bank Anglers Hours	Tube Anglers Hours	Ice Anglers Hours	Total Anglers Hours	
1	8	Weekday	84	37	0	0	121	
	Interval +/- at	8 totals: 95% C.I.:	84 104	37 74	0 0	0 0	121 128	
1	9	Weekend	54	0	0	0	54	
	Interval +/- at	9 totals: 95% C.I.:	54 72	0 0	0 0	0 0	54 72	
1	12	Weekday	42	0	0	0	42	
		Weekend	30	0	0	0	30	
	Interval +/- at	12 totals: 95% C.I.:	72 103	0 0	0 0	0 0	72 103	
Section +/- at			1 totals: 95% C.I.:	6552 1515	2271 677	17 34	0 0	8840 1660
2	1	Weekday	0	396	0	0	396	
		Weekend	36	432	0	0	468	
	Interval +/- at	1 totals: 95% C.I.:	36 51	828 300	0 0	0 0	864 304	
2	2	Weekday	21	208	0	0	228	
		Weekend	51	169	0	0	219	
	Interval +/- at	2 totals: 95% C.I.:	72 82	377 247	0 0	0 0	447 260	
2	3	Weekday	98	130	0	0	228	
		Weekend	0	163	0	0	163	
	Interval +/- at	3 totals: 95% C.I.:	98 99	293 228	0 0	0 0	391 249	
2	4	Weekday	59	235	0	0	293	
		Weekend	73	37	0	0	110	
	Interval +/- at	4 totals: 95% C.I.:	132 123	272 230	0 0	0 0	403 261	

Appendix B, continued.

Section	Interval	Day Type	Boat Anglers Hours	Bank Anglers Hours	Tube Anglers Hours	Ice Anglers Hours	Total Anglers Hours
2	5	Weekday	531	66	0	0	598
		Weekend	155	116	0	0	271
-----			-----	-----	-----	-----	-----
	Interval +/- at	5 totals: 95% C.I.:	686 586	182 252	0 0	0 0	869 638
-----			-----	-----	-----	-----	-----
2	6	Weekday	365	91	0	0	457
		Weekend	277	16	0	0	294
-----			-----	-----	-----	-----	-----
	Interval +/- at	6 totals: 95% C.I.:	642 402	107 186	0 0	0 0	751 443
-----			-----	-----	-----	-----	-----
2	7	Weekday	286	167	0	0	453
		Weekend	281	42	0	0	323
-----			-----	-----	-----	-----	-----
	Interval +/- at	7 totals: 95% C.I.:	567 257	209 148	0 0	0 0	776 297
-----			-----	-----	-----	-----	-----
2	8	Weekday	19	0	0	0	19
		Weekend	59	0	0	0	59
-----			-----	-----	-----	-----	-----
	Interval +/- at	8 totals: 95% C.I.:	78 69	0 0	0 0	0 0	78 69
-----			-----	-----	-----	-----	-----
2	9	Weekend	54	0	0	0	54
-----			-----	-----	-----	-----	-----
	Interval +/- at	9 totals: 95% C.I.:	54 72	0 0	0 0	0 0	54 72
-----			-----	-----	-----	-----	-----
2	12	Weekday	126	126	0	0	252
		Weekend	0	90	0	0	90
-----			-----	-----	-----	-----	-----
	Interval +/- at	12 totals: 95% C.I.:	126 266	216 207	0 0	0 0	342 337
-----			-----	-----	-----	-----	-----
=====			=====	=====	=====	=====	=====
	Section +/- at	2 totals: 95% C.I.:	2491 828	2484 647	0 0	0 0	4975 1051
=====			=====	=====	=====	=====	=====
	Seas +/- at	on totals: 95% C.I.:	9043 1726	4755 937	17 34	0 0	13815 1965

Appendix C. Summary of projected harvest by species, Kootenai River creel survey, March 2001-February 2002.

IDFG Creel Survey System **Year: 2001**
Harvest Summary By Section And Interval

Body Of Water: Kootenai River

Sec	Int	DY CD	Fish Kept	Fish Released	Fish Caught	RBT	MWF	CTT	NPM	KOK	WCTXRBT	SUC	PMT
1	1	1	471	236	707	189	94	189	0	0	0	0	0
		2	13	52	65	13	0	0	0	0	0	0	0
		---	---	---	---	---	---	---	---	---	---	---	---
Int +/-	1 T 95%	ot: Cl:	484 403	288 165	772 784	202 196	94 118	189 247	0 0	0 0	0 0	0 0	0 0
		---	---	---	---	---	---	---	---	---	---	---	---
1	2	1	72	0	72	18	36	0	0	0	18	0	0
		2	152	0	152	0	152	0	0	0	0	0	0
		---	---	---	---	---	---	---	---	---	---	---	---
Int +/-	2 T 95%	ot: Cl:	224 350	0 0	224 350	18 37	188 338	0 0	0 0	0 0	18 42	0 0	0 0
		---	---	---	---	---	---	---	---	---	---	---	---
1	3	1	207	0	207	104	0	0	0	0	0	104	0
		2	253	1105	1357	207	23	0	23	0	0	0	0
		---	---	---	---	---	---	---	---	---	---	---	---
Int +/-	3 T 95%	ot: Cl:	460 366	1105 745	1564 1702	311 360	23 44	0 0	23 50	0 0	0 0	104 221	0 0
		---	---	---	---	---	---	---	---	---	---	---	---
1	4	1	0	0	0	0	0	0	0	0	0	0	0
		2	66	308	374	44	0	0	0	0	0	0	0
		---	---	---	---	---	---	---	---	---	---	---	---
Int +/-	4 T 95%	ot: Cl:	66 64	308 299	374 363	44 43	0 0	0 0	0 0	0 0	0 0	0 0	0 0
		---	---	---	---	---	---	---	---	---	---	---	---
1	5	1	887	2969	3856	614	307	0	69	0	0	0	0
		2	542	723	1265	120	60	0	151	0	0	0	90
		---	---	---	---	---	---	---	---	---	---	---	---
Int +/-	5 T 95%	ot: Cl:	1429 1627	3692 1857	5121 3147	734 1062	367 541	0 0	220 295	0 0	0 0	0 0	90 124
		---	---	---	---	---	---	---	---	---	---	---	---
1	6	1	242	85	327	28	214	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0	0	0
		---	---	---	---	---	---	---	---	---	---	---	---
Int +/-	6 T 95%	ot: Cl:	242 460	85 73	327 469	28 53	214 406	0 0	0 0	0 0	0 0	0 0	0 0
		---	---	---	---	---	---	---	---	---	---	---	---
1	7	1	117	323	439	105	12	0	0	0	0	0	0
		2	315	682	997	209	105	0	0	0	0	0	0
		---	---	---	---	---	---	---	---	---	---	---	---
Int +/-	7 T 95%	ot: Cl:	432 307	1005 373	1436 904	314 307	117 130	0 0	0 0	0 0	0 0	0 0	0 0
		---	---	---	---	---	---	---	---	---	---	---	---

Appendix C, continued.

Sec	Int	DY CD	Fish Kept	Fish Released	Fish Caught	RBT	MWF	CTT	NPM	KOK	WCTXRBT	SUC	PMT
1	8	1 2	20 0	81 0	101 0	20 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Int +/- ---	8 T 95% ---	ot: Cl: ---	20 58 ---	81 86 ---	101 110 ---	20 58 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---
1	9	1 2	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Int +/- ---	9 T 95% ---	ot: Cl: ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---
1	10	1 2	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Int +/- ---	10 T 95% ---	ot: Cl: ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---
1	11	1 2	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Int +/- ---	11 T 95% ---	ot: Cl: ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---
1	12	1 2	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Int +/- ---	12 T 95% ---	ot: Cl: ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---
1	13	1 2	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0	0 0
Int +/- ---	13 T 95% ---	ot: Cl: ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---	0 0 ---
Sec +/- ---	1 T 95% ---	ot: Cl: ---	3357 1838 ---	6564 2067 ---	9919 3837 ---	1671 1183 ---	1003 778 ---	189 247 ---	243 300 ---	0 0 ---	18 42 ---	104 221 ---	90 124 ---
2	1	1 2	129 35	0 141	129 176	0 0	50 0	0 0	0 18	0 0	0 0	14 6	0 0
Int +/- ---	1 T 95% ---	ot: Cl: ---	164 138 ---	141 51 ---	305 219 ---	0 0 ---	50 53 ---	0 0 ---	18 40 ---	0 0 ---	0 0 ---	20 27 ---	0 0 ---
2	2	1 2	152 23	177 233	329 255	0 7	76 0	25 7	0 0	0 0	0 0	51 0	0 0
Int +/- ---	2 T 95% ---	ot: Cl: ---	175 211 ---	410 244 ---	584 679 ---	7 18 ---	76 152 ---	32 54 ---	0 0 ---	0 0 ---	0 0 ---	51 109 ---	0 0 ---

Appendix C, continued.

Sec	Int	DY CD	Fish Kept	Fish Released	Fish Caught	RBT	MWF	CTT	NPM	KOK	WCTXRBT	SUC	PMT
2	3	1	304	0	304	0	0	0	0	0	0	152	152
		2	0	163	163	0	0	0	0	0	0	0	0
Int	3 T	ot:	304	163	467	0	0	0	0	0	0	152	152
+/-	95%	Cl:	502	112	514	0	0	0	0	0	0	251	251
---	---	---	---	---	---	---	---	---	---	---	---	---	---
2	4	1	42	753	795	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0	0	0
Int	4 T	ot:	42	753	795	0	0	0	0	0	0	0	0
+/-	95%	Cl:	79	596	1083	0	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---	---	---	---
2	5	1	169	84	253	118	51	0	0	0	0	0	0
		2	0	54	54	0	0	0	0	0	0	0	0
Int	5 T	ot:	169	138	307	118	51	0	0	0	0	0	0
+/-	95%	Cl:	251	99	332	227	77	0	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---	---	---	---
2	6	1	0	0	0	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0	0	0
Int	6 T	ot:	0	0	0	0	0	0	0	0	0	0	0
+/-	95%	Cl:	0	0	0	0	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---	---	---	---
2	7	1	101	130	230	86	0	14	0	0	0	0	0
		2	0	388	388	0	0	0	0	0	0	0	0
Int	7 T	ot:	101	518	618	86	0	14	0	0	0	0	0
+/-	95%	Cl:	122	139	262	105	0	18	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---	---	---	---
2	8	1	0	0	0	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0	0	0
Int	8 T	ot:	0	0	0	0	0	0	0	0	0	0	0
+/-	95%	Cl:	0	0	0	0	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---	---	---	---
2	9	1	0	0	0	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0	0	0
Int	9 T	ot:	0	0	0	0	0	0	0	0	0	0	0
+/-	95%	Cl:	0	0	0	0	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---	---	---	---
2	10	1	0	0	0	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0	0	0
Int	10 T	ot:	0	0	0	0	0	0	0	0	0	0	0
+/-	95%	Cl:	0	0	0	0	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---	---	---	---
2	11	1	0	0	0	0	0	0	0	0	0	0	0
		2	0	0	0	0	0	0	0	0	0	0	0
---	---	---	---	---	---	---	---	---	---	---	---	---	---

Appendix C, continued.

Sec	Int	DY CD	Fish Kept	Fish Released	Fish Caught	RBT	MWF	CTT	NPM	KOK	WCTXRBT	SUC	PMT
Int	11 T	ot:	0	0	0	0	0	0	0	0	0	0	0
+/-	95%	Cl:	0	0	0	0	0	0	0	0	0	0	0
---	---	---	---	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2	12	1	12	147	160	0	12	0	0	0	0	0	0
		2	4	12	16	0	0	0	4	0	0	0	0
---	---	---	---	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Int	12 T	ot:	16	159	176	0	12	0	4	0	0	0	0
+/-	95%	Cl:	30	168	253	0	28	0	11	0	0	0	0
---	---	---	---	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2	13	1	0	0	0	0	0	0	0	0	0	0	0
2	13	2	0	0	0	0	0	0	0	0	0	0	0
---	---	---	---	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Int	13 T	ot:	0	0	0	0	0	0	0	0	0	0	0
+/-	95%	Cl:	0	0	0	0	0	0	0	0	0	0	0
---	---	---	---	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Sec	2 T	ot:	971	2282	3252	211	189	46	22	0	0	223	152
+/-	95%	Cl:	633	699	1480	251	181	57	42	0	0	275	251
---	---	---	---	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Sea	sn T	ot:	4328	8846	13171	1882	1192	235	265	0	18	327	242
+/-	95%	Cl:	1944	2182	4112	1209	799	254	302	0	42	353	280
---	---	---	---	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Appendix D. Summary of catch rates, Kootenai River creel survey, March 2001-February 2002.

IDFG Creel Survey System
2001 Summary For Catch Rate By Day Type And Interval For Total Hours

Body Or Water: Kootenai River

Sec	Int	Day Type	CR Kept	CR Relsd	CR Cght	CR-Rainbow Kept	CR-Rainbow Rel	Cr-Mwhthfish Kept	Cr-Mwhthfish Rel	CR-Cutthroa Kept	CR-Cutthroa Rel	CR_Npikemin Kept	CR_Npikemin Rel	CR-Kokanee Kept	CR-Kokanee Rel	CR-Cutxrain Kept	CR-Cutxrain Rel	CR-Sucker Kept	CR-Sucker Rel	CR-Peamuth Kept	CR-Peamuth Rel	
1	1	Weekday	0.95	0.48	1.43	0.38	0.29	0.19	0.00	0.38	0.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Weekend	0.04	0.15	0.19	0.04	0.12	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2	Weekday	0.22	0.00	0.22	0.06	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00
		Weekend	0.50	0.00	0.50	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3	Weekday	1.00	0.00	1.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00
		Weekend	0.30	1.32	1.62	0.25	0.96	0.03	0.16	0.00	0.03	0.03	0.03	0.03	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.08
	4	Weekday	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Weekend	0.38	1.75	2.13	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.00	1.25
	5	Weekday	0.80	2.68	3.48	0.55	1.08	0.28	0.40	0.00	0.25	0.06	0.43	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.03
		Weekend	0.39	0.52	0.91	0.09	0.20	0.04	0.07	0.00	0.00	0.11	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00
	6	Weekday	0.25	0.09	0.34	0.03	0.04	0.22	0.03	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Weekend	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	7	Weekday	0.23	0.64	0.87	0.21	0.36	0.02	0.06	0.00	0.04	0.00	0.07	0.00	0.00	0.00	0.00	0.09	0.00	0.01	0.00	0.02
		Weekend	0.29	0.63	0.92	0.19	0.44	0.10	0.21	0.00	0.02	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.10
	8	Weekday	0.17	0.67	0.83	0.17	0.50	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Weekend	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	9	Weekday	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Weekend	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	10	Weekday	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Weekend	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	11	Weekday	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Weekend	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	12	Weekday	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Weekend	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	13	Weekday	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Weekend	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Appendix D, continued.

Sec	Int	Day Type	Cr Kept	Cr Relsd	Cr Cght	Rbt Kept	Rel	Mwf Kept	Rel	Ctt Kept	Rel	Npm Kept	Rel	Kok Kept	Rel	Cxr Kept	Rel	Suc Kept	Rel	Pmt Kept	Rel
	SEC1	wkdy CR:	0.28	0.35	0.63	0.15	0.17	0.06	0.05	0.03	0.04	0.00	0.04	0.00	0.00	0.00	0.01	0.04	0.01	0.00	0.00
	SEC1	wknd CR:	0.15	0.34	0.48	0.06	0.13	0.05	0.04	0.00	0.00	0.01	0.02	0.00	0.00	0.00	0.01	0.00	0.04	0.01	0.11
	SEC1	Sson CR:	0.24	0.35	0.59	0.12	0.16	0.06	0.15	0.02	0.03	0.01	0.03	0.00	0.00	0.00	0.01	0.03	0.02	0.00	0.03
	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
2	1	Weekday	0.33	0.00	0.33	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00
		Weekend	0.08	0.30	0.38	0.00	0.06	0.00	0.21	0.00	0.00	0.04	0.03	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
	2	Weekday	0.67	0.78	1.44	0.00	0.33	0.33	0.22	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.00	0.00
		Weekend	0.10	1.06	1.16	0.03	0.27	0.00	0.00	0.03	0.07	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.51
	3	Weekday	1.33	0.00	1.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.67	0.00	0.67	0.00
		Weekend	0.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4	Weekday	0.14	2.57	2.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.29	0.00	0.14
		Weekend	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5	Weekday	0.28	0.14	0.42	0.20	0.03	0.09	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.17
		Weekend	0.00	0.20	0.20	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6	Weekday	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Weekend	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	7	Weekday	0.22	0.29	0.51	0.19	0.22	0.00	0.00	0.03	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Weekend	0.00	1.20	1.20	0.00	1.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	8	Weekday	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Weekend	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	9	Weekday	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Weekend	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	10	Weekday	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Weekend	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	11	Weekday	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Weekend	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	12	Weekday	0.05	0.59	0.63	0.00	0.44	0.05	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Weekend	0.04	0.13	0.17	0.00	0.00	0.00	0.13	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	13	Weekday	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Weekend	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	SEC2	wkdy CR:	0.23	0.34	0.57	0.03	0.08	0.05	0.02	0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.07	0.18	0.05	0.02
	SEC2	wknd CR:	0.02	0.3	0.32	0.00	0.12	0.00	0.03	0.00	0.00	0.01	0.09	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.04

Appendix D, continued.

Sec	Int	Day Type	Cr Kept	Cr Relsd	Cr Cght	Rbt Kept	Rel	Mwf Kept	Rel	Ctt Kept	Rel	Npm Kept	Rel	Kok Kept	Rel	Cxr Kept	Rel	Suc Kept	Rel	Pmt Kept	Rel
	SEC2	Sson CR:	0.17	0.33	0.50	0.02	0.09	0.03	0.02	0.01	0.01	0.00	0.04	0.00	0.00	0.00	0.00	0.05	0.13	0.04	0.03
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	WKDY	Season CR	0.26	0.34	0.60	0.09	0.13	0.05	0.03	0.02	0.02	0.03	0.00	0.00	0.00	0.00	0.00	0.05	0.09	0.03	0.01
	WKND	Season CR	0.08	0.32	0.03	0.03	0.12	0.03	0.03	0.00	0.01	0.05	0.1	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.07
	AVE	Season CR	0.21	0.34	0.54	0.07	0.13	0.05	0.03	0.01	0.02	0.04	0.00	0.00	0.00	0.00	0.00	0.04	0.07	0.02	0.03

Appendix E. Estimated yield by species, Kootenai River creel survey, March 2001-February 2002.

IDFG Creel Survey System
Summary For 2001 Yield By Section And Interval

Body Of Water: Kootenai River

Sec	Int	Day Type	Tot Yld (Kg)	Rbt Av Lgth (Cm)	Rbt Yld (Kg)	Mwf Av Lgth (Cm)	Mwf Yld (Kg)	Ctt Av Lgth (Cm)	Ctt Yld (Kg)	Npm Av Lgth (Cm)	Npm Yld (Kg)	Kok Av Lgth (Cm)	Kok Yld (Kg)	Ctxrbt Av Lgth (Cm)	Ctxrbt Yld (Kg)	Suc Av Lgth (Cm)	Suc Yld (Kg)	Pmt Av Lgth (Cm)	Pmt Yld (Kg)	
1	1	Weekday	63	27		16		21		0		0		0		0		0		0
		Weekend	13	13	26	0	30	0	24	0	0	0	0	0	0	0	0	0	0	0
		--	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Inte +	rval /- at	1 Totals:	76	39		16		21		0		0		0		0		0		0
		95% C.I.:	52	39		20		28		0		0		0		0		0		0
		--	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1	2	Weekday	8	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	0
		Weekend	25	0	0	25	0	0	0	0	0	0	0	0	40	0	0	0	0	0
		--	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Inte +	rval /- at	2 Totals:	33	0		25		0		0		0		8		0		0		0
		95% C.I.:	57	0		53		0		0		0		19		0		0		0
		--	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1	3	Weekday	68	0		0	0	0	0	0	0	0	0	0	0	68		0		0
		Weekend	75	72	17	4	0	0	0	0	0	0	0	0	0	0	42	0	0	0
		--	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Inte +	rval /- at	3 Totals:	143	72		4		0		0		0		0		68		0		0
		95% C.I.:	184	115		7		0		0		0		0		144		0		0
		--	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1	4	Weekday	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Weekend	11	7		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		--	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Inte +	rval /- at	4 Totals:	11	7		0		0		0		0		0		0		0		0
		95% C.I.:	9	8		0		0		0		0		0		0		0		0
		--	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Appendix E, continued.

Sec	Int	Day	Tot	Rbt	Rbt	Mwf	Mwf	Ctt	Ctt	Npm	Npm	Kok	Kok	Ctxrbt	Ctxrbt	Suc	Suc	Pmt	Pmt	
		Type	Yld (Kg)	Av Lgth (Cm)																
1	5	Weekday	398	186		213		0		0		0		0		0		0		
		Weekend	60	44	32	16	46	0	30	0	0	0	0	0	0	0	0	0	0	0
		--	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Inte +	rval /- at	5 Totals:	459	230		229		0		0		0		0		0		0		
		95% C.I.:	517	328		400		0		0		0		0		0		0		
---	---	--	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	
1	6	Weekday	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Weekend	0	0	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		--	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	
Inte +	rval /- at	6 Totals:	0	0		0		0		0		0		0		0		0		
		95% C.I.:	0	0		0		0		0		0		0		0		0		
---	---	--	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	
1	7	Weekday	32	32	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Weekend	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		--	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	
Inte +	rval /- at	7 Totals:	32	32		0		0		0		0		0		0		0		
		95% C.I.:	39	39		0		0		0		0		0		0		0		
---	---	--	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		
1	8	Weekday	2	2	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Weekend	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		--	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	
Inte +	rval /- at	8 Totals:	2	2		0		0		0		0		0		0		0		
		95% C.I.:	7	7		0		0		0		0		0		0		0		
---	---	--	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		
1	9	Weekday	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		Weekend	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
		--	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	
Inte +	rval /- at	9 Totals:	0	0		0		0		0		0		0		0		0		
		95% C.I.:	0	0		0		0		0		0		0		0		0		
---	---	--	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		

Appendix E, continued.

Sec	Int	Day	Tot Yld (Kg)	Rbt Av Lgth (Cm)	Rbt Yld (Kg)	Mwf Av Lgth (Cm)	Mwf Yld (Kg)	Ctt Av Lgth (Cm)	Ctt Yld (Kg)	Npm Av Lgth (Cm)	Npm Yld (Kg)	Kok Av Lgth (Cm)	Kok Yld (Kg)	Ctxrbt Av Lgth (Cm)	Ctxrbt Yld (Kg)	Suc Av Lgth (Cm)	Suc Yld (Kg)	Pmt Av Lgth (Cm)	Pmt Yld (Kg)
		Type																	
1	10	Weekday	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Weekend	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
--			----	-----	----	-----	----	-----	----	-----	----	-----	----	-----	----	-----	----	-----	----
Inte	rval 1	0 Totals:	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0
+	/- at	95% C.I.:	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0
--			----	-----	----	-----	----	-----	----	-----	----	-----	----	-----	----	-----	----	-----	----
1	11	Weekday	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Weekend	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
--			----	-----	----	-----	----	-----	----	-----	----	-----	----	-----	----	-----	----	-----	----
Inte	rval 1	1 Totals:	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0
+	/- at	95% C.I.:	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0
--			----	-----	----	-----	----	-----	----	-----	----	-----	----	-----	----	-----	----	-----	----
1	12	Weekday	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Weekend	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
--			----	-----	----	-----	----	-----	----	-----	----	-----	----	-----	----	-----	----	-----	----
Inte	rval 1	2 Totals:	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0
+	/- at	95% C.I.:	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0
--			----	-----	----	-----	----	-----	----	-----	----	-----	----	-----	----	-----	----	-----	----
1	13	Weekday	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Weekend	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
--			----	-----	----	-----	----	-----	----	-----	----	-----	----	-----	----	-----	----	-----	----
Inte	rval 1	3 Totals:	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0
+	/- at	95% C.I.:	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0
--			----	-----	----	-----	----	-----	----	-----	----	-----	----	-----	----	-----	----	-----	----
Sect	ion 1	Totals:	755	382		273	21	0	0	0	0	0	8	68	0	0	0	0	
+	/- at	95% C.I.:	556	352		404	28	0	0	0	0	19	144	0	0	0	0	0	
====	=====	=====	====	=====	====	=====	====	=====	====	=====	====	=====	====	=====	====	=====	====	=====	
2	1	Weekday	3	0		3	0	0	0	0	0	0	0	0	0	0	0	0	
		Weekend	6	0	0	0	32	0	0	0	0	0	0	0	0	6	40	0	0
--			----	-----	----	-----	----	-----	----	-----	----	-----	----	-----	----	-----	----	-----	----
--			----	-----	48	-----	0	-----	0	-----	0	-----	0	-----	0	-----	48	-----	0

Appendix E, continued.

Sec	Int	Day Type	Tot Yld (Kg)	Rbt Av Lgth (Cm)	Rbt Yld (Kg)	Mwf Av Lgth (Cm)	Mwf Yld (Kg)	Ctt Av Lgth (Cm)	Ctt Yld (Kg)	Npm Av Lgth (Cm)	Npm Yld (Kg)	Kok Av Lgth (Cm)	Kok Yld (Kg)	Ctxrbt Av Lgth (Cm)	Ctxrbt Yld (Kg)	Suc Av Lgth (Cm)	Suc Yld (Kg)	Pmt Av Lgth (Cm)	Pmt Yld (Kg)
Inte +	rval /- at	1 Totals:	9	0		3		0		0		0		0		6		0	
		95% C.I.:	11	0		5		0		0		0		0		9		0	
2	2	Weekday	17	0		13		4		0		0		0		0		0	
		Weekend	7	2	0	0	25	5	28	0	0	0	0	0	0	0	0	0	0
					34		0		45		0		0		0		44		0
Inte +	rval /- at	2 Totals:	23	2		13		9		0		0		0		0		0	
		95% C.I.:	30	5		26		14		0		0		0		0		0	
2	3	Weekday	106	0		0		0		0		0		0		90		16	
		Weekend	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42	0	24
					0		0		0		0		0		0		0		0
Inte +	rval /- at	3 Totals:	106	0		0		0		0		0		0		90		16	
		95% C.I.:	151	0		0		0		0		0		0		148		27	
2	4	Weekday	0	0		0		0		0		0		0		0		0	
		Weekend	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
					0		0		0		0		0		0		0		0
Inte +	rval /- at	4 Totals:	0	0		0		0		0		0		0		0		0	
		95% C.I.:	0	0		0		0		0		0		0		0		0	
2	5	Weekday	32	32		0		0		0		0		0		0		0	
		Weekend	0	0	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0
					0		0		0		0		0		0		0		0
Inte +	rval /- at	5 Totals:	32	32		0		0		0		0		0		0		0	
		95% C.I.:	62	62		0		0		0		0		0		0		0	
2	6	Weekday	0	0		0		0		0		0		0		0		0	
		Weekend	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
					0		0		0		0		0		0		0		0

Appendix E, continued.

Sec	Int	Day Type	Tot		Rbt		Mwf		Ctt		Npm		Kok		Ctxrbt		Suc		Pmt	
			Yld (Kg)	Av Lgth (Cm)																
Inte	rval	6 Totals:	0	0		0		0		0		0		0		0		0		0
+	/- at	95% C.I.:	0	0		0		0		0		0		0		0		0		0
---	---	--	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2	7	Weekday	23	23		0		0		0		0		0		0		0		0
		Weekend	0	0	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		--	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Inte	rval	7 Totals:	23	23		0		0		0		0		0		0		0		0
+	/- at	95% C.I.:	27	27		0		0		0		0		0		0		0		0
2	8	Weekday	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Weekend	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		--	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Inte	rval	8 Totals:	0	0		0		0		0		0		0		0		0		0
+	/- at	95% C.I.:	0	0		0		0		0		0		0		0		0		0
---	---	--	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2	9	Weekday	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Weekend	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		--	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Inte	rval	9 Totals:	0	0		0		0		0		0		0		0		0		0
+	/- at	95% C.I.:	0	0		0		0		0		0		0		0		0		0
---	---	--	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2	10	Weekday	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Weekend	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		--	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Inte	rval 1	0 Totals:	0	0		0		0		0		0		0		0		0		0
+	/- at	95% C.I.:	0	0		0		0		0		0		0		0		0		0
---	---	--	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
2	11	Weekday	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Weekend	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		--	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Inte	rval 1	1 Totals:	0	0		0		0		0		0		0		0		0		0
+	/- at	95% C.I.:	0	0		0		0		0		0		0		0		0		0
---	---	--	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Appendix E, continued.

Sec	Int	Day Type	Tot Yld (Kg)	Rbt Av Lgth (Cm)	Rbt Yld (Kg)	Mwf Av Lgth (Cm)	Mwf Yld (Kg)	Ctt Av Lgth (Cm)	Ctt Yld (Kg)	Npm Av Lgth (Cm)	Npm Yld (Kg)	Kok Av Lgth (Cm)	Kok Yld (Kg)	Ctxrbt Av Lgth (Cm)	Ctxrbt Yld (Kg)	Suc Av Lgth (Cm)	Suc Yld (Kg)	Pmt Av Lgth (Cm)	Pmt Yld (Kg)
2	12	Weekday	0	0		0		0		0		0		0		0		0	
		Weekend	0	0	0	0	25	0	0	0	0	0	0	0	0	0	0	0	0
		--	----	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---
Inte	rval 1	2 Totals:	0	0		0		0		0		0		0		0		0	
+	/- at	95% C.I.:	0	0		0		0		0		0		0		0		0	
---	-----	--	----	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---
2	13	Weekday	0	0		0		0		0		0		0		0		0	
		Weekend	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		--	----	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---
Inte	rval 1	3 Totals:	0	0		0		0		0		0		0		0		0	
+	/- at	95% C.I.:	0	0		0		0		0		0		0		0		0	
---	-----	--	----	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---	-----	---
Sect	ion 2	Totals:	193	56		16		9		0		0		0		96		16	
+	/- at	95% C.I.:	168	68		27		14		0		0		0		149		27	
===	=====	=====	====	=====	===	=====	===	=====	===	=====	===	=====	===	=====	===	=====	===	=====	===
		Seas																	
		on																	
+	/- at	95% C.I.:	581	438		405		29		0		0		8		163		16	
								31		0		0		19		207		27	

ALLOMETRIC GROWTH EQUATION:

RBT WT = 0.000035*LEN**4.521
MWF WT = 0.203071*LEN**1.532
CTT WT = 0.006786*LEN**3.031
NPM WT = 1.000000*LEN**0.000
KOK WT = 1.000000*LEN**0.000
CTTXRBT WT = 0.000000*LEN**0.000
SUC WT = 0.000000*LEN**22.812
PMT WT = 0.000000*LEN**6.245

where * means multiplication and ** means exponent
weight in grams and length in centimeters

Prepared by:

Jody P. Walters
Senior Fishery Research Biologist

Approved by:

IDAHO DEPARTMENT OF FISH AND GAME

Virgil K. Moore, Chief
Bureau of Fisheries

Dan Schill
Fisheries Research Manager