

PROGRESS REPORT
2003

UPPER SKAGIT WATERSHED
NATIVE CHAR PROJECT

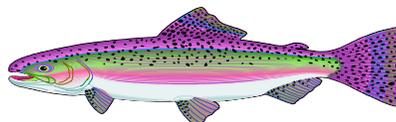
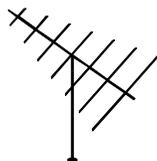
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INTRODUCTION

A biotelemetry study of resident char in the upper Skagit River, BC, commenced in 2001 and was expanded in 2002 and 2003. This report presents the results and findings of the 2003 study of the Upper Skagit River Watershed Native Char Project. The intent of this project was to examine the potential of radio telemetry techniques in the watershed and to collect preliminary life-history information of native char. Telemetry project activities in 2003 were conducted in both the BC and Washington areas of the Skagit River watershed. The BC project component was administered by the Ministry of Water, Land and Air Protection (Surrey, BC). Project support and cooperative management of the study was provided by Seattle City Light (Seattle, Washington).

This report summarizes activities undertaken in 2003, and provides reference to individual radio-tagged and external-tagged-only char that were released in 2001 and 2002 (Nelson et al. 2003). Previous studies of char and other resident fish species in the upper Skagit River watershed include: McPhail and Taylor 1995; Rissling 1997; and Harper and Scott 1998a, 1998b.

Note that this summary report emphasizes the results obtained during the 2003 field season in 2003, and does not extensively elaborate on these results. It is recommended that a comprehensive project report that brings together all project information and data from all project years (2001-2004, from both BC and Washington programs) is produced following the final field season of the Upper Skagit Watershed Native Char Project.

Goals and Objectives

Goals for the Upper Skagit Watershed Native Char Project are:

1. Identify bull trout (*Salvelinus confluentus*) and Dolly Varden (*S. malma*) char presence and distribution within the upper Skagit watershed;
2. Distinguish between adfluvial and fluvial stocks of bull trout and Dolly Varden char and describe life history strategies;
3. Provide estimates of bull trout and Dolly Varden population size;
4. Identify, describe, and photodocument critical habitats for bull trout and Dolly Varden char, including locations used for spawning, rearing, adult holding, and feeding;
5. Obtain individual fish information including species, sex, life stage, fork length, weight, age, and condition factor;
6. Continue to monitor water temperature by location and time in relation to habitat use and migration patterns;
7. Provide scientifically based resource management recommendations;
8. Promote international technical and data exchange;
9. Identify information gaps and develop an action plan to complete char



- conservation status evaluation; and
10. Maintain a watershed approach to char investigations in the upper Skagit River.

Objectives for the 2003 Skagit River Char Telemetry Project were:

1. Radio tag a minimum of 10 char in the mainstem Skagit River (BC) near Ross Lake in March and/or April 2003;
2. Implement and elaborate the tracking protocols established in 2002 for both stationary and mobile tracking;
3. Conduct swim surveys to provide estimates of abundance for adult char in the Skagit River watershed upstream of Ross Lake;
4. Add a third telemetry station at the junction of the Skagit and Sumallo River, and maintain this station throughout the 2003 field season;
5. Locate and document spawning sites (redds) and other important habitats;
6. Collect biological information for each fish caught during the capture/tag operations; and
7. Collect tissue samples for genetic analysis to the University of British Columbia.

METHODS

Study Area

While the northern headwaters of the Skagit River watershed lie in the coastal mountains of southwestern BC, the mouth of the Skagit River empties into the marine waters of northern Puget Sound, Washington (Figure 1). The Skagit River crosses the international border between Canada and the US at the northern end of Ross Lake, a man-made reservoir in the Cascade Range of Washington. The study area for the BC component of the 2003 Skagit River Char Telemetry Project was limited to the upper Skagit River watershed (in BC), and included the northern end of Ross Lake (from the Canada-US border south approximately 2 km into the US; Figure 2). The BC study area is within Skagit Valley Provincial Park/Recreation Area, established in 1995. Major tributaries to the BC Skagit River include the Klesilkwa and Sumallo rivers and Snass Creek (Figure 2).

At the commencement of the project, a 1:50,000 map of the Skagit River within the BC study area was marked for river kilometer (rkm) reference points; these positions are referred to throughout this report (in addition, a GPS unit was used to collect UTM coordinates for key positions and habitat features, and these data are also presented). The point where the Skagit River empties into Ross Lake at full pool, was designated rkm 0.0. (This is also the fishing boundary.) A gravel/dirt road provides access to the study area; this road leaves the Trans-Canada Highway (1) about 4 km west of Hope, BC, and follows Silverhope Creek and the Klesilkwa River into the core study area. The road crosses the Skagit River at "26-Mile Bridge," located at rkm 18.0 (Figure 2). The



Sumallo River enters the upper Skagit River at rkm 32.6 near the Hope-Princeton Highway; the Sumallo River is accessible to upstream-migrating fish from its confluence with the Skagit River to the residential area near Sunshine Valley.

Water Temperature

Water temperatures were collected at sites in the lower BC Skagit and in Washington by way of data loggers. The field program and reporting of the water temperature data collections in 2001-2003 was coordinated by Seattle City Light.

Radio Telemetry

Telemetry Receivers and Radio Tags

The telemetry receivers used for this study were the model SRX_400 built by LOTEK Engineering Inc. of Newmarket, Ontario, with their CODE_LOG version W31 and W32 data processing and storage program. The tags used for the study were the LOTEK model MCFT-3A and the MCFT-3L digitally coded radio tags. The MCFT-3A tags have a minimum 750-day battery life, are 16.2 mm in diameter, 46 mm long, weigh 16.0 g in air and 6.7 g in water; the burst rate of signal transmission was every 6 s. The MCFT-3L tags have a minimum 1517-day battery life, are 16.2 mm in diameter, 73 mm long, weigh 25.0 g in air and 11.1 g in water; the burst rate of signal transmission was every 5 s. The shorter (MCFT-3A) tags were to be implanted in char that were at least 450 mm FL, while the longer (MCFT-3L) tags were to be implanted in char that were at least 550 mm FL.

Radio tag frequencies used in Canada in 2003 were:

MCFT-3A tags: 149.440 MHz (Lotek "Channel 7")
MCFT-3L tags: 149.400 MHz (Lotek "Channel 5")

Two-digit codes (unique for each frequency) were assigned to each radio tag by the manufacturer. Channel and code combinations were unique to all individual radio tags deployed during the program. During all tracking, the receiver was set to scan each frequency for 7 s, during which time one to two pulses will be transmitted by a tag (the pulses were 5 or 6 s apart); the receiver then searches the next frequency. If a signal is received, the receiver decodes the signal, reports the tag code and signal strength and stores the data in internal memory. As many as 12-15 different fish can be recorded on the same frequency during the same scan cycle (7 s) so that the probability of a fish not being detected is low if only a few fish are present on a single channel. The receivers, fitted with a single antenna, can scan over 13 frequencies and decode over 150 different radio-tagged fish within a 78-second period.



Telemetry Stations

Three telemetry stations were established for this study (Figure 2). The first station (station 1) was located at rkm 1.4, approximately 100 m downstream of the "Swing Bridge" (suspension bridge) over the Skagit River. The second station (station 8) was located at rkm 18.1, approximately 100 m upstream from the road bridge ("26-Mile Bridge") over the Skagit River at rkm 18.0. The third station (Station 9) will be located near the confluence of the Skagit and Sumallo rivers (at rkm 32.5). The receivers at these sites were established to monitor and record the passage of radio-tagged char on a continuous basis, 24 h per day, during the entire study.

Telemetry station set up followed the procedures outlined in Nelson et al. (2001). Final positions of fixed-station receiver sites were determined based on the following criteria:

1. secure location with easy access;
2. adjacent to a section of confined river channel such that signals can be detected from all radio-tagged fish passing the location; and
3. access to a tall tree for antenna placement (antennae located 20-40 feet above the water have much greater detection ranges than those near water level).

Each receiver and antenna switcher was enclosed in a weather-proof container and powered by a 12-v, deep-cycle RV battery. During fall and winter, a 130 amp-h battery will operate the system for 10-12 days without changing or recharging depending on the strength of the battery. Field staff downloaded data and replaced RV batteries at both fixed-station sites every 7-10 days, well within the operable range of battery life. In an effort to quell public curiosity (and possible disruption of the telemetry station hardware) a printed notice regarding the project and the purpose of the equipment was posted on the outside of the container (Appendix A). In addition, a public notice regarding the telemetry project was posted at public campgrounds, information boards, and parking areas along the BC Skagit River downstream of the 26-Mile Bridge.

Each stationary receiver had two antennae coupled to it in order to determine the direction of movement of the fish and to maximize the probability of detecting each fish (two antennae cover almost twice the area of one). One antenna was pointed upstream, and the other pointed downstream; which allowed the determination of the direction of movement of each individual fish and ensured that even rapidly moving fish were recorded on at least one antenna. Differentiation of directionality was tested at the time each station was established. Following the installation of a basic telemetry station (antennas in tree, cables connected to receiver secured in waterproof enclosure), a technician would walk upstream and downstream (approximately 100-200 yards) from the station, and place an activated radio tag (of the type used in the study) in the water. Using 2-way radios for communication, a technician at the receiver site would then check that the comparative power levels of tag detections for each antenna indicated the position/direction of the radio tag (upstream or downstream of the station).



Data retrieval from fixed-station receivers

Routine data downloading (typically on a weekly basis) was accomplished by connecting the receiver to a portable notebook computer and executing the LOTEK data downloading routines. All data was downloaded in hexadecimal (or .dmp) format and then converted to readable (text) format and browsed for data errors. Once the data was secure, the receiver memory was erased and scanning was continued.

Mobile Surveys

Mobile telemetry surveys were conducted by vehicle, foot, and boat during the study. Mobile tracking surveys by vehicle and foot were scheduled to occur in conjunction with most download events. Boat surveys were scheduled to occur with swim surveys in order to establish observer error estimates for observed mark rates. Vehicle and foot surveys were conducted using a hand-held, 2-element, H-style antenna and boat surveys were conducted using a whip antenna. Vehicle surveys were conducted by driving along the river and scanning for radio tag signals, and stopping to confirm the channel and code of any detected signals and document the location of the tag. Foot surveys were conducted by walking with the receiver and antenna along the river (from the road or from a fishing site) and scanning for radio tags. Boat surveys were conducted with two technicians from an inflatable raft, with one technician monitoring the receiver and the other person manning the raft. In all three cases, when radio tags were detected, an attempt was made to determine the location of the tag, and position data (river km and GPS coordinates) were recorded.

Data Management and Security

The Lotek SRX 400 telemetry receivers used for this project automatically stored all received data to an internal memory within the receiver. These data were downloaded to a portable notebook computer whenever a fixed-station receiver site was visited. Downloaded data was later backed up from the notebook onto a diskette, and then transferred to an office-based desktop computer. All downloaded data were also sent (via e-mail) to the project manager. Verified data received by the project manager was backed up onto a CD ROM and loaded into a raw database for analysis.

The data stored for each signal received by the SRX 400 receiver include the following:

- a) date;
- b) time (h/min/s);
- c) channel or frequency;
- d) power level of signal;
- e) antenna (combined=0, #1, #2); and
- f) signal code.



The project manager and project fisheries technicians analysed data downloaded from fixed station receivers and summarized tag detections in an electronic database and on hardcopy summary sheets. In addition, a binder was maintained with copies of study area maps (one for each radio tag released). Following fixed-station downloads and mobile tracking surveys, detection data for individual tags (date and location) were entered on these maps; this system provided current knowledge of the most recent locations of individual radio-tagged char throughout the program.

Fish Capture for Tagging

All adult char radio tagged in the BC Skagit River in 2003 were captured using conventional angling techniques. Angling was conducted by personnel experienced with the proper handling and tagging techniques necessary to minimize stress on the captured fish. The standard procedure following capture and prior to tagging was to place the char into a cylindrical holding/recovery tube (constructed of heavy black fabric, with a zipper along the top and mesh at both ends). The holding tubes greatly assisted the process of hook removal and provided an excellent means of secure transport to the tagging location.

Assessment, Handling, Sampling, and Tagging of Char

Once captured and secured in a zippered holding tube, all char were moved to a central location on the river bank for tag application and biosampling. Captured char were transferred from the holding tubes to a portable floating pen. Sex was determined by an external examination of the characteristics of the face, jaw, and adipose fin. Only char over 45 cm FL and in excellent condition (no open wounds, bleeding, or abnormal behaviour) were radio tagged. Char were anaesthetised with clove oil prior to radio tag insertion. For all radio-tagged fish, processing included noting the sex (field estimation), collection of scales (for ageing), collection of a pectoral fin ray for ageing and a piece of pectoral fin from the fin ray (for DNA analysis), taking a fork length and girth measurement, weighing the fish on a portable scale, noting the condition; and applying the radio tag, and a pink spaghetti tag (with unique 5-digit number). For char that were not radio tagged (surplus or smaller fish), the same data (above) was collected and a white spaghetti tag (with unique 5-digit number) was applied just under the dorsal fin. Fin rays were collected and preserved in the manner described by Nelson and Caverhill (1999) for char sampled from Chilliwack Lake, BC. Prior to tag applications, the channel and code of the radio tag, and/or the 5-digit number and color of the spaghetti tag, were recorded on the tag release data form. A complete description of the surgical tagging procedure can be found in the report provided by the US tag team in 2002 (Ed Connor, Seattle City Light, pers. comm.).



Char Population Estimation

One of the primary goals of SEEC's Upper Skagit Watershed Native Char Project is to "provide estimates of bull trout and Dolly Varden population size." The presence of radio tagged/externally marked char in the Upper Skagit system, mixed in with the balance of the char population (untagged), presents a unique opportunity to develop a robust population estimate for this population. Our approach used a combination of swim counts and adjacent mobile telemetry surveys.

The combined swim counts and telemetry surveys provided:

- 1) an estimate of swim count survey efficiencies, based on a comparison of tags observed versus tags known to be present (detected from radio signals),
- 2) preliminary estimates of char population status in the Upper Skagit River; and;
- 3) preliminary tools in the development of accurate, long-term, stock health indices for char in the Upper Skagit system.

Rational

Snorkel floats are a useful stock assessment tool widely used in British Columbia. The Upper Skagit River, which is relatively narrow and generally provides excellent water clarity, provides an ideal system for index counts of this kind. Upper Skagit snorkel floats have been conducted in 1982 through 1994, and in 1998 (Harper and Scott 1998). An index of char abundance, based on repeated snorkel counts, can provide a robust, cost-effective tool for long term management.

However, a single snorkel count provides only an index of the number of fish in the river at the time of the float. The count is not complete, because (1) swimmers miss some fish, and (2) some sections of river are not floated. If multiple counts are done over the course of the run, these can be used to suggest periods of peak migration. However, it is not known (3) what proportion of the fish were seen on previous floats, and (4) the entire period of steelhead migration is not censured. If snorkel floats are repeated on an annual basis, they can be used to track trends of char abundance over time. Such counts are a comparable index only, rather than an estimate of the total adult return.

To generate escapement estimates, it is necessary to estimate:

1. observer efficiency (the proportion of fish missed in sections floated);
2. the number of fish in sections not floated;
3. survey-life or residence time (the time a fish spends in the survey area); and
4. a run-timing curve (the start and end dates of the run).



These parameters can be estimated by marking a sub-sample of fish with radio transmitters and external, visual tags prior to conducting swims. Observer efficiency (1) is estimated as the number of visual tags seen divided by the number of tags known to be present (from transmitters). To estimate the number of fish in sections not swum (2), the ratio of total fish present to radio tags present in sections swum is applied to transmitters in sections not swum. Survey life (3) is determined from tracking data. The run-timing curve (4) is generated from radio tracking information.

When all four parameters are available, and area under the curve estimate of total escapement can be developed. Estimates of this kind have proven effective in Lower Mainland rivers, and have been developed for the Chilliwack and Cheakamus River systems (Nelson et. al. 2001, Korman and Ahrens 2000).

Approach

For each survey, we used experienced swim survey technicians (visually counting both char and rainbow trout, and documenting observed spaghetti-tagged char, by tag color) and an experienced telemetry technician (detecting and recording the presence of radio tagged char within groups of char observed - or not observed - by the swim crew). The telemetry technician (and accompanying boat technician followed behind snorkelers, either in the project raft or on foot (depending on the section of river being surveyed). In addition to collecting observed (snorkel count) and detected (telemetry) data during the survey, the telemetry and boat technicians provided logistic and safety support for the snorkel crew, and periodically confirmed and backed up the observed fish count data from the swim crew.

Full-system surveys were conducted by surveying sections of the Skagit River from the Sumallo River confluence to the US border over 2-3 days of adjacent field surveys. Data for both the observed counts and telemetry detections was entered into a data base. These data, stratified by date and location, were later used to calculate the ratios of observed vs. detected tagged char, and thus formulate observer efficiency rates for each survey. These efficiencies were used to expand observed counts of both char and rainbow trout, by survey section. Expanded section counts were then summed to produce total system estimates for each survey set.

RESULTS AND DISCUSSION

Radio Telemetry

Telemetry Stations

Three fixed telemetry stations were established on the mainstem Skagit River to record the date, time, and direction of movement of any radio-tagged char that migrated past



the station. Telemetry receivers installed at the fixed stations were downloaded approximately every 7-10 days. Station 1, located at rkm 1.4, and station 8, located at rkm 17.9 were both installed and activated on March 1, 2003. Station 9, located near the confluence of the Skagit and Sumallo rivers at rkm 32.5, was activated on June 16 2003. All three stations were activated prior to the tagging and release of any radio-tagged char in 2003. Once activated, the stations were able to monitor any movements from the 15 radio-tagged char released in 2001 (10 on the Canadian side and 5 on the US side). Stations 1 and 8 functioned very well throughout the entire field program (277 days) until their removal on Dec 2 (Table 1). Station 9 experiences 2 periods of down time due to a solar panel malfunction and a dead battery.

Tag Applications

Summaries of all tag and release information for all char captured and sampled/tagged in Canada in 2001, 2002, and 2003 are presented in Tables 2, 3, and 4, respectively. This summary includes all pertinent data collected at the time of capture and release, including date, time, location, and all biosampling data. Tables 3-4 also include a unique "Fish Number" for each individual char for reference in subsequent tables.

A total of 16 char were radio tagged, biosampled, and released in Canada during the 2003 project (Table 4). Figure 3 illustrates the timing of tag application throughout the 2001, 2002, and 2003 field seasons; note that 2001 applications were predominantly fall, whereas 2002 applications were predominantly summer and early fall and 2003 applications were all spring.

Appendices B and C provide summaries of tag release data for the US char activities in 2001 and 2002, respectively (data provided by E. Jeans, R2 Consultants, Redmond, WA). No char were radio tagged and released in the US in 2003. In 2001 and 2002, US char were tagged near the tributary-lake confluences of Beaver Creek and Ruby Creek (Figure 1).

Movement and Fate of Radio-Tagged Char

Table 5 presents a summary of all detection information for each of the radio-tagged char released in BC in 2001-2003. For 2003, additional information regarding detections of radio-tagged char on the US side of the border is not complete (detection data not received and summarized at the time this report was submitted). A "fate" summary is provided that summarizes the known and likely movement/behavior of individual radio-tagged char following release.

For the 16 radio-tagged char released in the spring of 2003, 15 (94%) moved several kms from the point of release, and 11 (69%) migrated upstream at least as far as station 8 (over 17 kms upstream from point of release). Four of these fish (25%) passed station 9 (over 32 kms upstream from point of release). Of the 16 radio-tagged char



released during the 2003 field season, 23 (68%) were determined to have spawned in the Skagit River in the fall of 2003, 7 (44%) likely spawned in the BC Skagit River between September and November (Table 5). Peak spawning appeared to occur during the week of Oct 26 when 7 radio-tagged char were determined to have spawned (Figure 4).

Trans-boundary Movements

It appears that the majority of the char population in the Upper Skagit Watershed utilize both sides of the border (both US and Canadian waters) as part of their life history requirements. Of the 13 char that were radio-tagged in BC in 2003 that were capable of crossing the Canadian /US border (live releases, not recaptured and killed, etc.), 12 (92%) crossed the border at least once (Table 6). Some of these fish crossed the border a minimum of 3 times.

For all radio-tagged char (2001-2003 releases), a very high percentage (over 95%) were detected passing over the border at least once. Later in this study, it is likely that those char that were not detected crossing the border will be explained (mortality, mis-detection, or migration following station removal in December). It is not likely that char overwinter in the Skagit River on the BC side of the border; thus, it appears that the upper Skagit watershed char population is virtually a trans-boundary population. A summary of detections and migratory behaviour for each radio-tagged char released in the US that migrated across the border and into Canada can be found in Appendix D.

Recaptures

A total of 4 tagged char were recaptured in 2003. A summary of these events, and the recapture events in 2001 and 2002, is provided in Table 7.

Biological Sampling

Biological samples collected from char captured during the project included tissue (for DNA analysis), scales (for ageing), and pectoral fin rays (for ageing).

Length Analysis

Fork lengths (mm) were taken from a total of 16 char captured in the BC Skagit in 2003. These char ranged from 465-662 mm (FL). Figure 5 provides an illustration of the length-frequency of char that were tagged (both radio tagged and external tagged) during the study. The average length of all char sampled in the early spring of 2003 (574.6 mm) was greater than the average length of all char sampled in the summer and fall of 2001 and 2002 (497.9 mm).



Age (Fin Ray) Analysis

Pectoral fin rays from 16 char captured in the BC Skagit River in 2003 were shipped to North-South Consultants Inc. (Winnipeg, Manitoba) for age analysis. Ages derived from these fin rays ranged from age 4-8 years. The 2003 age data were combined with age data from char sampled in 2001 and 2003; the total sample size of 81 aged char appears to correlate with fish size (Figure 6).

DNA Analysis

All tissue samples collected in BC for DNA analysis were secured for analysis at a later date. It is anticipated that the DNA analyses will provide information to assign bull trout, Dolly Varden, or hybrid classifications to respective individual fish.

Scale Analysis

Scales taken from native char in BC in 2003 were secured for analysis at a later date.

Char Redd Surveys and swim Surveys

Char Redd Surveys

Char redds were observed a during swim survey on the mainstem Skagit River (between stations 1 and 8) on 8 October. A total of 11 redds were observed with all of them being between rkm 15.7 and 17.0. A summary of these observations is provided in Table 8.

Swim Surveys

A total of three full-system surveys were undertaking during the course of the 2003 study. These surveys were conducted:

- 1) 21-22 July
- 2) 14-16 September
- 3) 8-9 October

Additional, partial surveys were conducted in the lower river in March 2003, and a single survey of the Sumallo River (from Sunshine Valley Bridge to the highway and rkm 3.7 - 0.1 of the Sumallo River upstream from the Skagit confluence). Swim survey data were collected on 11 dates over the 2003 field season. Raw data for these swim surveys is provided in Appendices E-H; respective expansion data is included in these Appendices. A summary of raw data (observed counts of char and rainbow trout) is presented in Table 9. Expanded char estimates are presented in Table 10. Expanded rainbow trout estimates are presented in respective Appendices.



Population Estimates

Full-system surveys (Sumallo River confluence to the US border) in July, September, and October resulted in estimated (expanded) counts of char (183, 247, and 265, respectively; Table 10). Estimated numbers of char observed during the October surveys likely represented a spawning component of the population. Juvenile char (less than 20 cm in length, likely age 0-2 years) were noticeably absent during all swim surveys. It is possible that juvenile char in the BC Skagit River are not as readily visible as the larger char (perhaps they are concealed in areas such as root wads, cut banks, and bolder patches where surveyors cannot see them), or if this size/age group resides mostly in Ross Lake. In any case the abundance of juvenile char is not estimated in these analyses, and is not included in the estimates of abundance.



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TABLES



Table 1. Summary of operational dates for fixed-station telemetry receivers deployed on the Skagit River, 2003. See Figure 2 for an illustration of the locations of fixed-station receiver sites.

| Receiver/ Station No. | Location (rkm) | UTM (GPS) | | Setup | | Removed | | No. Days (Span) | Comments |
|-----------------------------|-------------------|------------|-----------|--------|-------|---------|-------|-----------------------|--------------------|
| | | | | Date | Time | Date | Time | | |
| 1 | 1.3 | 5431249.18 | 641756.78 | 01-Mar | 12:25 | 02-Dec | 10:00 | 277 | Station never down |
| 8 | 17.9 | 5442078.00 | 633845.00 | 01-Mar | 11:09 | 02-Dec | 9:00 | 277 | Station never down |
| 9 | 32.5 | 5452112 | 639916 | 16-Jun | 10:30 | 14-Dec | 10:30 | 162 | * |

* Station down from 3-Aug to 12-Aug (solar panel wire shorted out)

* Station down from 3-Dec to 14-Dec (battery dead)

Table 2. Pertinent data collected for each char captured and sampled during the Skagit River char telemetry program, 2001.

| Fish No. | Sex | Radio Tagged? (Y/N) | Release | | Release Location | | | Radio Tag | | Anchor Tag | | Fork Length (mm) | Girth (mm) | Weight (g) | Scale | | Fin Ray | | DNA Analysis ¹ | | | Condition at Release | Comments | |
|------------------------------------|-----|---------------------|---------|-------|------------------|--------|---------|-----------|------|------------|-------|------------------|------------|------------|-------|-----|---------|-----|---------------------------|-----------|-----------------|----------------------|----------------------------------|-----------------|
| | | | Date | Time | rkm | UTM | UTM | Ch | Code | No. | Color | | | | No. | Age | No. | Age | DNA No. | DV HYB BT | Angler Initials | | | Tagger Initials |
| <i>Radio Tag Applied</i> | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | M | Y | 02-Oct | 17:05 | 0.0 | 641584 | 5430294 | 7 | 72 | - | - | 485 | 225 | 1180 | 1 | 4 | - | 1 | | KL | EJ | Excellent | Fin ray not taken; no anchor tag | |
| 2 | M | Y | 02-Oct | 17:05 | 0.0 | 641584 | 5430294 | 5 | 52 | - | - | 577 | 260 | 1700 | 2 | 5 | - | 2 | | CM | EJ | Excellent | Fin ray not taken; no anchor tag | |
| 3 | M | Y | 02-Oct | 17:05 | 0.0 | 641584 | 5430294 | 7 | 70 | - | - | 535 | 220 | 1120 | 3 | 5 | - | 3 | | JR | EJ | Excellent | Fin ray not taken; no anchor tag | |
| 4 | M | Y | 02-Oct | 17:05 | 0.0 | 641584 | 5430294 | 7 | 71 | - | - | 525 | 215 | 1220 | 4 | 4 | - | 4 | | JR | EJ | Excellent | Fin ray not taken; no anchor tag | |
| 5 | M | Y | 02-Oct | 17:05 | 0.0 | 641584 | 5430294 | 7 | 73 | - | - | 498 | 210 | 1000 | 5 | N/A | - | 5 | | CM | EJ | Excellent | Fin ray not taken; no anchor tag | |
| 6 | M | Y | 10-Oct | 12:25 | 0.0 | 641584 | 5430294 | 5 | 51 | - | - | 560 | 250 | 1790 | 6 | 4 | - | 6 | | JR | EJ | Excellent | Fin ray not taken; no anchor tag | |
| 7 | F | Y | 10-Oct | 12:25 | 0.0 | 641584 | 5430294 | 5 | 50 | - | - | 539 | 245 | 1760 | 7 | 5 | - | 7 | | JR | EJ | Excellent | Fin ray not taken; no anchor tag | |
| 8 | M | Y | 10-Oct | 12:25 | 0.0 | 641584 | 5430294 | 7 | 74 | - | - | 505 | 233 | 1360 | 8 | 4 | - | 8 | | JR | EJ | Excellent | Fin ray not taken; no anchor tag | |
| 9 | M | Y | 15-Oct | 13:15 | 0.0 | 641584 | 5430294 | 5 | 56 | - | - | 550 | 250 | 1820 | 9 | 4 | - | 9 | | GG | EJ | Excellent | Fin ray not taken; no anchor tag | |
| 10 | M | Y | 22-Oct | 14:00 | 15.3 | 635638 | 5440987 | 7 | 79 | - | - | 518 | 230 | 1470 | 10 | N/A | - | 10 | | JR | EJ | Excellent | Fin ray not taken; no anchor tag | |
| <i>No Radio Tag Applied</i> | | | | | | | | | | | | | | | | | | | | | | | | |
| NT1 | F | N | 02-Oct | 16:50 | -0.3 | 641664 | 5430080 | - | - | 101 | Br | 494 | 205 | 900 | NT1 | 4 | NT1 | 8 | NT1 | | JR | EJ | Excellent | |
| NT2 | M | N | 02-Oct | 16:50 | -0.3 | 641664 | 5430080 | - | - | 102 | Br | 434 | 198 | 780 | NT2 | 4 | NT2 | 5 | NT2 | | CM | EJ | Excellent | |
| NT3 | F | N | 02-Oct | 16:50 | -0.3 | 641664 | 5430080 | - | - | 103 | Br | 451 | 185 | 740 | NT3 | 5 | NT3 | 7 | NT3 | | JR | EJ | Excellent | |
| NT4 | F | N | 10-Oct | 12:25 | 0.0 | 641584 | 5430294 | - | - | 104 | Br | 385 | 170 | 620 | NT4 | 3 | NT4 | 3 | NT4 | | JR | EJ | Excellent | |
| NT5 | F | N | 10-Oct | 13:00 | 0.0 | 641584 | 5430294 | - | - | 105 | Br | 408 | 19.3 | 756 | NT5 | 4 | NT5 | 4 | NT5 | | JR | EJ | Excellent | |
| NT6 | F | N | 22-Oct | 14:00 | 15.0 | 635768 | 5440646 | - | - | 106 | Br | 460 | 180 | 760 | NT6 | 4 | NT6 | 5 | NT6 | | JR | EJ | Excellent | |

¹ DV = Dolly Varden; HYB = Hybrid; BT = bull trout
 N/A = Not Available
 Note: DNA analyses not completed by August 2002

Table 3. Pertinent data collected for each char captured and sampled during the Skagit River char telemetry program, 2002.

| Fish No. | Field Judge | Sex Confirm | Radio Tagged? (Y/N) | Date | Capture | | Release | | Radio Tag Ch | Spaghetti Tag (Y/N) | Spaghetti Tag No. | Spaghetti Tag Color ³ | Fork Length (mm) | Girth (mm) | Weight (g) | Scale No. | Scale Age | Fin Ray | | DV or BT | Fluvial or Adfluvial | DNA No. | Angler Initials | Tagger Initials | Condition at Release | Comments | |
|--------------------------|-------------|-------------|---------------------|-----------|---------|----------|---------|----------|--------------|---------------------|-------------------|----------------------------------|------------------|------------|------------|-------------|-----------|---------|-----|----------|----------------------|-----------|-----------------|-----------------|----------------------|---------------------|---|
| | | | | | Time | Rkm | Time | Rkm | | | | | | | | | | No. | Age | | | | | | | | Comment |
| Radio Tag Applied | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11 | M | | Y | 8-May-02 | 12:30 | 0.3 km | 14:40 | -0.3 | 5 | 55 | Y | 516 | white | 640 | 295 | 2500 | 11 | 11 | 8 | | BT | adfluvial | 11 | CEJ | Pier | Excellent | First field surgery. Thick body walls; catheter bends slightly. |
| 12 | M | | Y | 27-Jul-02 | 11:20 | 0.5 km | 16:25 | -0.3 | 7 | 75 | Y | BC 01117 | pink | 515 | 210 | 1180 | 12 | 12 | 4 | | BT | | 12 | CEJ | JR | Good | Fish bled during surgery and slow to recover. Tag beeps but CODE_LOG not functioning so Code 75 NOT confirmed. |
| 13 | M | F | N | 27-Jul-02 | 11:30 | 0.5 km | N/A | - | - | - | N | - | - | 512 | 215 | 1200 | 13 | 13 | 7 | Poor | BT | | 13 | CEJ | JR | Dead | Surgery went well. However, could not recover fish after surgery. Fish originally thought to be male. Opened after it died and actually female. |
| 14 | M | | Y | 13-Aug-02 | 8:35 | 8.7 km | 9:20 | 8.7 km | 7 | 78 | Y | BC 01114 | pink | 610 | 270 | - | 14 | 14 | 8 | | BT | | 14 | JR | CEJ | Excellent | Size, age, DNA sampling conducted in recovery water. Shortened surgery procedure. Began use of ovadine rather than salt. Excellent recovery. DNA sample not in ethanol until 2100. Male b. deep adipose, jaw slightly hooked. |
| 15 | F | | Y | 13-Aug-02 | 8:30 | 8.7 km | 9:49 | 8.7 km | 7 | 76 | Y | BC 01123 | pink | 508 | 221 | - | 15 | 15 | 5 | | BT | | 15 | CEJ | JR | Excellent | Sex based on blunt nose, small/narrow adipose. DNA sample not in ethanol until 2100. |
| 16 | M | | Y | 13-Aug-02 | 10:40 | 7.8 km | 11:47 | 7.8 km | 7 | 77 | Y | BC 01115 | pink | 565 | 270 | 2150 * | 16 | 16 | 6 | | BT | | 16 | Pier | Pier | Excellent | Weight (after surgery) is WITH TAG IN . DNA sample not in ethanol until 2100. |
| 17 | M | | Y | 13-Aug-02 | 10:45 | 7.8 km | 12:08 | 7.8 km | 5 | 57 | Y | BC 01122 | pink | 622 | 276 | 2500 | 17 | 17 | 10 | Poor | BT | | 17 | JR | JR | Excellent | Sex based on some hook to nose. DNA sample not in ethanol until 2100. Big radio tag. |
| 18 | M | | Y | 13-Aug-02 | 10:50 | 7.8 km | 12:38 | 7.8 km | 7 | 35 | Y | BC 01119 | pink | 582 | 251 | 2000 | 18 | 18 | 10 | Poor | BT | | 18 | CEJ | CEJ | Excellent | DNA sample not in ethanol until 2100. Fish was later recaptured and found to have 2 radio tags. This fish is also fish # 6 channel 1 code 51. |
| 19 | F | | Y | 13-Aug-02 | 11:02 | 7.8 km | 12:46 | 7.8 km | 7 | 44 | Y | BC 01124 | pink | 540 | 235 | 1400 | 19 | 19 | 9 | Poor | BT | | 19 | CEJ | Pier | Excellent | Smaller adipose, no hook, tight belly. Not drugged enough and squirmed during procedure. DNA sample not in ethanol until 2100. |
| 20 | M | | Y | 13-Aug-02 | 14:02 | | 16:02 | 3.5 km ? | 7 | 38 | Y | BC 01129 | pink | 600 | 254 | - | 20 | 20 | 10 | | BT | | 20 | JR | CEJ | Excellent | Big adipose, fins w/ distinct white line, some hook. Excellent surgery. DNA sample not in ethanol until 2100. CHECK Rkm with UTM's. |
| 21 | F | | Y | 13-Aug-02 | 17:45 | 1.0 km ? | 18:30 | 1.0 km ? | 7 | 37 | Y | BC 01121 | pink | 485 | 230 | 1125 | 21 | 21 | 8 | | BT | | 21 | JR | JR | Excellent | Small adipose, short lower jaw. Good recovery. DNA sample not in ethanol until 2100. CHECK Rkm with UTM's. |
| 22 | F | | Y | 14-Aug-02 | 9:50 | 9.5 km | 11:33 | 8.8 km | 7 | 36 | Y | BC 01116 | pink | 540 | 206 | - | 22 | 22 | 5 | | BT | | 22 | CEJ | Pier | Good | Appears that spots on females are brighter and more distinct. |
| 23 | F | | Y | 14-Aug-02 | 10:45 | 9.0 km | 11:47 | 8.8 km | 5 | 53 | Y | BC 01111 | pink | 677 | 305 | - | 23 | 23 | 6 | | BT | | 23 | JR | JR | Excellent | Season leader. Drew blood on fin clip. |
| 24 | M | | Y | 19-Aug-02 | 6:15 | 18.0 km | 9:22 | 17.4 km | 5 | 22 | Y | BC 01132 | pink | 615 | 275 | - | 24 | 24 | 5 | | BT | | 24 | JR | CEJ | Excellent | UTMs now in NAD 1927 Canada to match map. |
| 25 | F | | Y | 19-Aug-02 | 8:15 | 17.6 km | 10:10 | 17.4 km | 7 | 43 | Y | BC 01135 | pink | 453 | 170 | - | 25 | 25 | 8 | | BT | | 25 | JM | JR | Holding in position | Fish expected to be too small to radio tag. In drugs for an extra two minutes while tag prepared. This makes a big difference in the speed of recovery. Holding position in stream on release (rather than spooking away). |
| 26 | F | | Y | 19-Aug-02 | 11:00 | 16.8 km | 12:30 | 16.6 km | 5 | 24 | Y | BC 01126 | pink | 585 | 252 | - | 26 | 26 | 7 | | BT | | 26 | JR | Pier | Excellent | Fish bled a bit at incision. Strong at release. UTM for capture position may be incorrect due to poor reception. |
| 27 | M | | Y | 19-Aug-02 | 11:00 | 16.8 km | 13:09 | 16.6 km | 7 | 40 | Y | BC 01118 | pink | 562 | 220 | 1600 w/ tag | 27 | 27 | 7 | | BT | | 27 | JR | CEJ | Excellent | This is also a RECAPTURE of yellow anchor tag 0903, released in Beaver Creek (US) on 18 Sept 2001. (x-ref on recapture sheet). Spaghetti tag applied to ensure sightability on snorkel floats. Weight is with radio tag in. Picture 14 is of gill parasite(?). UTM's for capture may not be accurate due to poor GPS coverage. |
| 28 | M | | Y | 19-Aug-02 | 11:00 | 16.8 km | 13:30 | 16.6 km | 5 | 21 | Y | BC 01127 | pink | 585 | 246 | - | 28 | 28 | 5 | | BT | | 28 | Pier | JR | Excellent | UTM for capture position may be incorrect due to poor reception. |
| 29 | M | | Y | 19-Aug-02 | 11:00 | 16.8 km | 13:51 | 16.6 km | 7 | 41 | Y | BC 01112 | pink | 595 | 259 | - | 29 | 29 | 5 | | BT | | 29 | Pier | Pier | Excellent | UTM for capture position may be incorrect due to poor reception. |
| 30 | F | | Y | 19-Aug-02 | 11:00 | 16.8 km | 14:04 | 16.6 km | 5 | 59 | Y | BC 01134 | pink | 590 | 254 | - | 30 | 30 | 6 | | BT | | 30 | JM | CEJ | Excellent | UTM for capture position may be incorrect due to poor reception. |
| 31 | M | | Y | 19-Aug-02 | 12:00 | 16.5 km | 14:46 | 16.6 km | 7 | 39 | Y | BC 01138 | pink | 585 | 249 | - | 31 | 31 | 5 | | BT | | 31 | JM | JR | Good | |
| 32 | M | | Y | 26-Aug-02 | 9:50 | 12.0 km | 11:08 | 11.9 km | 7 | 42 | Y | BC 01148 | pink | 465 | 200 | - | 32 | 32 | 5 | | BT | | 32 | JR | CEJ | Excellent | Slight hook to jaw, adipose is large for fish size |
| 33 | M | | Y | 26-Aug-02 | 9:30 | 12.1 km | 11:50 | 11.9 km | 7 | 30 | Y | BC 01130 | pink | 562 | 249 | - | 33 | 33 | 6 | | BT | | 33 | JR | JR | Excellent | |
| 34 | M | | Y | 26-Aug-02 | 13:35 | 9.2 km | 15:20 | 9.0 km | 5 | 19 | Y | BC 01125 | pink | 581 | 245 | - | 34 | 34 | 6 | Poor | BT | | 34 | CEJ | CEJ | Excellent | This fish was hooked deeply and hook was cut off and left in fish. It was later removed and fish was released in excellent condition. |
| 35 | M | | Y | 26-Aug-02 | 14:00 | 9.0 km | 15:20 | 9.0 km | 5 | 15 | Y | BC 01136 | pink | 666 | 305 | - | 35 | 35 | 9 | | BT | | 35 | CEJ | JR | Excellent | Fishing fly found and removed from chin. |
| 36 | F | | Y | 27-Aug-02 | 8:28 | 6.7 km | 9:51 | 5.5 km | 7 | 34 | Y | BC 01128 | pink | 485 | 200 | - | 36 | 36 | 8 | | BT | | 36 | JR | Pier | Excellent | First LGL surgery anterior to pelvic fin. Needle still went near caudal. |

Table 3. Pertinent data collected for each char captured and sampled during the Skagit River char telemetry program, 2002.

| Fish No. | Field | Sex | | Radio Tagged? (Y/N) | Date | Capture | | Release | | Radio Tag Ch | Spaghetti Tag (Y/N) | Spaghetti Tag No. | Spaghetti Tag Color ³ | Fork Length (mm) | Girth (mm) | Weight (g) | Scale No. | Scale Age | Fin Ray | | DV or BT | Fluvial or Adfluvial | DNA No. | Angler Initials | Tagger Initials | Condition at Release | Comments | |
|-----------------------------|-------|---------|---------|---------------------|-----------|---------|----------|---------|----------|--------------|---------------------|-------------------|----------------------------------|------------------|------------|------------|-----------|-----------|---------|-----------|----------|----------------------|-----------|-----------------|-----------------|---|-----------|---|
| | | Confirm | Tagged? | | | Time | Rkm | Time | Rkm | | | | | | | | | | No. | Age | | | | | | | | No. |
| 37 | F | | | Y | 27-Aug-02 | 8:29 | 6.7 km | 9:56 | 5.5 km | 7 | 33 | Y | BC 01131 | pink | 485 | 203 | 37 | 37 | | | BT | 37 | JM | CEJ | Excellent | This fish is a recapture (NT #6) that was now large enough to radio tag. Surgery also anterior to pelvic fin. Fin ray was sampled last year and regrowth was excellent. Anchor tag removed and replaced with spaghetti tag. | | |
| 38 | F | Y | Y | Y | 10-Sep-02 | 9:30 | 0.1 km | 10:23 | 0.1 km | 5 | 55 | Y | BC 01133 | pink | 604 | 298 | 38 | 38 | | Unageable | BT | 38 | CEJ | Pier | Good | Full of eggs and ready to spawn this year. Chunky fish. Incision Anterior to Pelvic | | |
| 39 | F | | | Y | 10-Sep-02 | 9:35 | 0.1 km | 11:05 | 0.1 km | 5 | 54 | Y | BC 01139 | pink | 635 | 305 | 39 | 39 | | Unageable | BT | 39 | CEJ | JR | Excellent | Fat chunky fish ready to spawn this year. Fish was accidentally poked internally a few times when it flinched while being tagged. Slow to recover. Antenna came out of fish higher up than usual. | | |
| 40 | F | | | Y | 10-Sep-02 | 7:45 | 0.9 km | 11:11 | 0.1 km | 7 | 43 | Y | BC 01120 | pink | 463 | 199 | 40 | 40 | 5 | | BT | 40 | JR | CEJ | Excellent | Fin ray 1/2 gone on one side. Scar on back where scale samples had possibly been taken from past sampling by Eric in 2001. | | |
| 41 | M | | | Y | 10-Sep-02 | 9:40 | 0.1 km | 11:44 | 0.1 km | 7 | 32 | Y | BC 01146 | pink | 485 | 196 | 41 | 41 | 9 | Very poor | BT | 41 | JR | Pier | Excellent | Male but small non typical adipose. Pier was happy with suture placement. | | |
| 42 | F | | | Y | 10-Sep-02 | 9:45 | 0.1 km | 11:56 | 0.1 km | 7 | 31 | Y | BC 01150 | pink | 483 | 223 | 42 | 42 | 4 | | BT | 42 | JR | JR | Excellent | Good surgery but moderate recovery (slugish) Energetic at release. | | |
| 43 | F | | | Y | 10-Sep-02 | 12:10 | 0.1 km | 13:24 | 0.1 km | 5 | 13 | Y | BC 01154 | pink | 575 | 254 | 43 | 43 | 6 | | BT | 43 | JR | CEJ | Good | Female based on adipose, tight belly, no hook jaw. Bled a bit at incision. Possibly this years spawner. | | |
| 44 | F | | | Y | 14-Sep-02 | 12:05 | 17.2 km | 14:43 | 16.7 km | 5 | 58 | Y | BC 01151 | pink | 551 | 248 | 44 | 44 | 11 | | BT | 44 | CEJ | Pier | Good | Bled a bit from the antenna exit. Orange stain on dorsal surface. Eggs inside are fairly loose. This years spawner. | | |
| 45 | F | Y | Y | Y | 14-Sep-02 | 13:49 | 16.7 km | 14:53 | 16.7 km | 5 | 20 | Y | BC 01152 | pink | 595 | 264 | 45 | 45 | | Unageable | BT | 45 | JR | CEJ | Excellent | Orange stain on dorsal surface. Eggs developed and seen at incision. This years spawner. | | |
| 46 | F | Y | Y | Y | 14-Sep-02 | 14:02 | 16.7 km | 15:11 | 16.7 km | 5 | 14 | Y | BC 01149 | pink | 584 | 246 | 46 | 46 | 6 | | BT | 46 | JR | JR | Excellent | No eggs seen at incision. Will probably not spawn this year. | | |
| 47 | M | | | Y | 14-Sep-02 | 16:00 | 15.6 km | 17:10 | 15.2 km | 5 | 10 | Y | BC 01144 | pink | 635 | 282 | 47 | 47 | 10 | | BT | 47 | JR | Pier | Excellent | Big fish. | | |
| 48 | F | Y | Y | Y | 14-Sep-02 | 16:10 | 15.6 km | 17:26 | 15.2 km | 5 | 16 | Y | BC 01153 | pink | 534 | 243 | 48 | 48 | 7 | | BT | 48 | JR | CEJ | Good | This years spawner. Eggs visible. | | |
| 49 | M | Y | Y | Y | 25-Sep-02 | 11:00 | 17.0 km | 13:22 | 16.7 km | 5 | 17 | Y | BC 01147 | pink | 718 | 329 | 49 | 49 | 8 | Poor | BT | 49 | CEJ | CEJ | Excellent | New Big Fish record for this year. Saw sperm at incision, this years spawner. Took awhile to recover. | | |
| 50 | F | Y | Y | Y | 25-Sep-02 | 11:23 | 17.0 km | 13:29 | 16.7 km | 5 | 11 | Y | BC 01143 | pink | 635 | 379 | 50 | 50 | 8 | | BT | 50 | CEJ | JR | Excellent | Fish bled a little bit at incision after she flinched during the sutures. Roe visible at incision, this years spawner. | | |
| No Radio Tag Applied | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NT7 | M | | | N | 8-May-02 | 11:30 | 0.6 km | 14:40 | -0.3 | | | Y | 545 | pink | 425 | 170 | 680 | NT7 | NT7 | 3 | | BT | adfluvial | NT7 | JR | JR | Excellent | |
| NT8 | F | | | N | 27-Jul-02 | 11:20 | 0.5 km | 16:25 | -0.3 | | | Y | 1290 | white | 430 | 170 | 650 | NT8 | NT8 | 4 | | BT | ? | NT8 | CEJ | JR | Excellent | Photo's #8 and #9 |
| NT9 | M | | | N | 27-Jul-02 | 11:30 | 0.5 km | 16:25 | -0.3 | | | N | - | - | 300 | 120 | 230 | NT9 | NT9 | 3 | | DV | ? | NT9 | CEJ | JR | Excellent | Fish too small to spaghetti tag. |
| NT10 | F | | | N | 1-Aug-02 | 11:40 | 0.7 km | 12:50 | 0.5 | | | N | - | - | 380 | 150 | - | NT10 | NT10 | 4 | | ? | | NT10 | JR | JR | Excellent | Fish too small to spaghetti tag. |
| NT11 | F | | | N | 1-Aug-02 | 14:00 | 0.5 km | 15:19 | -0.3 | | | Y | 01287 | white | 405 | 160 | - | NT11 | NT11 | 4 | | ? | fluvial | NT11 | JR | JR | Excellent | Too small to radio tag. Caught at logs just d/s of the honey hole. |
| NT12 | M | | | N | 1-Aug-02 | 13:45 | 0.5 km | 15:20 | -0.3 | | | N | - | - | 320 | 135 | - | NT12 | NT12 | 3 | | ? | fluvial | NT12 | Pier | JR | Excellent | Too small to spag. / radio tag. Caught at tailout of the honey hole. |
| NT13 | F | | | N | 13-Aug-02 | 17:30 | 3.9 km ? | 18:33 | 1.0 km ? | | | N | - | - | 326 | 132 | 280 | NT13 | NT13 | 4 | | ? | | NT 13 | Pier | JR | Excellent | Sex is based on short jaw, small adipose fin for size. Spots are orange / pink. |
| NT14 | M | | | N | 13-Aug-02 | 14:00 | ? | 16:04 | 5.5 km | | | N | - | - | 317 | 140 | - | NT 14 | NT 14 | 4 | | DV | | NT 14 | JR | CEJ | Excellent | Sex is a guess based on heavily marked fins. Fish hooked near eye. Plot UTM's to confirm Rkm. |
| NT15 | M | | | N | 19-Aug-02 | 8:15 | 17.6 km | 9:47 | 17.4 km | | | Y | 1275 | white | 376 | 163 | 520 | NT15 | NT15 | 5 | Poor | | | NT 15 | Pier | JR | Excellent | UTMs are now in NAD 1927 Canada to match the map. |
| NT16 | M | | | N | 19-Aug-02 | 8:15 | 17.6 km | 9:51 | 17.4 km | | | Y | 1284 | white | 414 | 170 | - | NT16 | NT16 | 5 | | | | NT16 | JM | JR | Good. | |
| NT17 | M | | | N | 19-Aug-02 | 8:15 | 17.6 km | 10:04 | 17.4 km | | | Y | 1276 | white | 396 | 170 | 570 | NT17 | NT17 | 4 | | | | NT17 | JR | JR | Excellent | |
| NT18 | M | | | N | 19-Aug-02 | 8:15 | 17.6 km | 10:10 | 17.4 km | | | Y | 1280 | white | 440 | 180 | 800 | NT18 | NT18 | 7 | | | | NT18 | JR | JR | Good. | |
| NT19 | M | | | N | 19-Aug-02 | 11:00 | 16.8 km | 14:10 | 16.6 km | | | Y | 1279 | white | 423 | 179 | 720 | NT19 | NT19 | 6 | | | | NT19 | JM | JR | Excellent | Old wound on upper lip. |
| NT20 | M | | | N | 19-Aug-02 | 11:00 | 16.8 km | 14:19 | 16.6 km | | | Y | 1289 | white | 366 | 153 | 520 | NT20 | NT20 | 4 | | | | NT20 | JM | JR | Excellent | Very small fish (this note to check on photo numbering). |
| NT21 | M | | | N | 26-Aug-02 | 7:45 | 14.5 km | 11:28 | 11.9 km | | | Y | 1283 | white | 352 | 148 | 340 | NT 21 | NT 21 | 5 | | | | NT 21 | Pier | JR | Excellent | |
| NT22 | F | | | N | 26-Aug-02 | 8:00 | 14.5 km | 11:34 | 11.9 km | | | N | | | 340 | 119 | 200 | NT 22 | NT 22 | 3 | | | | NT 22 | JM | JR | Excellent | |

Table 3. Pertinent data collected for each char captured and sampled during the Skagit River char telemetry program, 2002.

| Fish No. | Field | Sex | Radio Tagged? | Date | Capture | | Release | | Radio Tag Ch | Spaghetti Tag Code | Spaghetti Tag No. | Spaghetti Tag Color ³ | Fork Length (mm) | Girth (mm) | Weight (g) | Scale No. | Age | Fin Ray | | DV or BT | Fluvial or Adfluvial | DNA No. | Angle Initials | Tagger Initials | Condition at Release | Comments | |
|----------|-------|---------------|---------------|-----------|---------|---------|---------|---------|--------------|--------------------|-------------------|----------------------------------|------------------|------------|------------|-----------|-------|---------|-------|-----------|----------------------|---------|----------------|-----------------|----------------------|-----------|---|
| | | Judge Confirm | | | (Y/N) | Time | Rkm | Time | | | | | | | | | | Rkm | No. | | | | | | | | Age |
| NT 23 | M | | N | 26-Aug-02 | 9:53 | 12.0 km | 11:41 | 11.9 km | | | | | 339 | 128 | 340 | NT 23 | | NT 23 | | Unageable | | | NT 23 | Pier | JR | Excellent | Picture of pec. Fin |
| NT 24 | M | | N | 26-Aug-02 | 10:00 | 11.9 km | 11:49 | 11.9 km | | | Y | 1273 | white | 362 | 144 | 480 | NT 24 | | NT 24 | 4 | | | NT 24 | JR | JR | Good. | Fish slow to recover. |
| NT 25 | M | | N | 26-Aug-02 | 10:17 | 11.9 km | 11:59 | 11.9 km | | | Y | 1288 | white | 357 | 137 | 440 | NT 25 | | NT 25 | 3 | | | NT 25 | JM | JR | Good. | |
| NT 26 | M | | N | 26-Aug-02 | 13:15 | 9.6 km | | | | | N | | | 511 | 211 | 1030 | NT 26 | | NT 26 | 7 | | | NT 26 | CEJ | | Mortality | Fish was found dead in holding tube when we went to tag it. Fish was beat up and in very poor condition when it was caught. Scarring on abdomen that looked like a radio tag surgery (incision), well healed (from 2001 or earlier); internal damage on this scar area. Parts of fins missing, very thin. Fish was confirmed as male. |
| NT 27 | F | | N | 26-Aug-02 | 14:01 | 9.0 km | 15:20 | 9.0 km | | | Y | 1285 | white | 533 | 206 | 1280 | NT 27 | | NT 27 | 7 | | | NT 27 | JR | JR | Excellent | Left eye of this fish was badly damaged (likely blind in this eye). Because of this we did not apply radio tag (spag tag only). Fish was fairly thin possibly due to injury (poor feeding ability) |
| NT 28 | F | | N | 27-Aug-02 | 12:00 | 4.0 km | 13:09 | 3.5 km | | | Y | 1215 | white | 410 | 190 | | NT 28 | | NT 28 | 6 | | | NT 28 | CEJ | CEJ | Excellent | Fish tagged in holding tube without anesthetic. |
| NT 29 | M | | N | 27-Aug-02 | 12:45 | 3.5 km | 13:15 | 3.5 km | | | Y | 1221 | white | 392 | 175 | | NT 29 | | NT 29 | | Unageable | | NT 29 | JR | CEJ | Excellent | Fish tagged in holding tube without anesthetic. Measurements are in tube and fish was difficult to determine sex. Small adipose, long jaw for a small fish. |
| NT 30 | F | | N | 27-Aug-02 | 15:25 | 0.5 km | 15:25 | 0.5 km | | | N | | | 485 | 209 | 1050 | NT 30 | | NT 30 | 8 | | | Mort 3i | CEJ | | Mortality | Fish was caught at transition into lake (2 other char captured also). Fish was moved slightly downstream to the next available tagging location; water temperature increased rapidly to 25 C so we quickly moved fish back upstream and attempted revival. This fish did not revive and died, the other 2 fish were fine (no sampling or tagging on the 2 releases). All 3 fish were large enough to radio tag. Fish was sampled following death. |
| NT 31 | M | | N | 14-Sep-02 | 8:30 | 0.1 km | 9:52 | 0.1 km | | | Y | 1222 | white | 580 | 259 | | NT 31 | | NT 31 | 5 | | | NT 31 | CEJ | JR | Excellent | Fish had previous incision and antenna scar but no radio tag inside Last years aborted procedure? Therefore we did not radio tag it and spaghetti tagged it. Fish had no sampling scars. |
| NT 32 | M | | N | 14-Sep-02 | 12:10 | 17.2 km | 15:19 | 16.7 km | | | Y | 1224 | white | 438 | 176 | 730 | NT 32 | | NT 32 | 8 | | | NT 32 | Pier | JR | Excellent | Called male because of hooked jaw. |
| NT 33 | F | | N | 14-Sep-02 | 12:10 | 17.2 km | 15:30 | 16.7 km | | | Y | 1216 | white | 429 | 207 | 820 | NT 33 | | NT 33 | 6 | | | NT 33 | JR | JR | Excellent | |
| NT 34 | F | | N | 14-Sep-02 | 16:00 | 15.6 km | 17:31 | 15.2 km | | | Y | 1210 | white | 491 | 189 | 950 | NT 34 | | NT 34 | 5 | | | NT 34 | JM | JR | Excellent | |

Table 4. Pertinent data collected for each char captured and sampled during the Skagit River char telemetry program, 2003.

| Fish No. | Sex | | Radio Tagged? (Y/N) | Date | Capture | | Release | | Radio Tag | | Spaghetti Tag (Y/N) | Spaghetti Tag | | Fork Length (mm) | Girth (mm) | Weight (g) | Scale No. | Age | Fin Ray | | | DV or BT | Fluvial or Adfluvial | DNA No. | Angler Initials | Tagger Initials | Condition at Release | | Comments |
|-----------|-------------|---------|---------------------|-----------|---------|---------|---------|------|-----------|-----------|---------------------|---------------|--------------------|------------------|------------|------------|-----------|-----|---------|------|---------|----------|----------------------|---------|-----------------|-----------------|----------------------|---|----------|
| | Field Judge | Confirm | | | Time | Rkm | Time | Rkm | Ch | Code | | No. | Color ³ | | | | | | No. | Age | Comment | | | | | | Release | Comments | |
| 51 | F | | Y | 21-Mar-03 | 11:45 | 0.5 km | 14:35 | -0.1 | 7 | 74 | Y | BC 01140 | pink | 585 | 265 | n/a | 51 | 51 | 7 | | | BT | adfluvial | 51 | SO | CEJ | Excellent | Fish in great shape. | |
| 52 | M | | Y | 21-Mar-03 | 12:04 | -0.2 km | 14:35 | -0.1 | 5 | 12 | Y | 564 | pink | 643 | 285 | n/a | 52 | 52 | 6 | | | BT | adfluvial | 52 | SO | PvD | Excellent | Fish in great shape. | |
| 53 | F | | Y | 21-Mar-03 | 13:15 | -0.2 km | 15:14 | -0.1 | 7 | 34 | Y | 559 | pink | 604 | 265 | n/a | 53 | 53 | 6 | | | BT | adfluvial | 53 | SO | CEJ | Excellent | Fish in great shape. | |
| 54 | M | | Y | 21-Mar-03 | 13:15 | -0.2 km | 15:20 | -0.1 | 5 | 38 | Y | 562 | pink | 490 | 211 | n/a | 54 | 54 | 6 | Poor | | BT | adfluvial | 54 | SO | PvD | Excellent | Surgery slower than others. | |
| 55 | M | | Y | 29-Mar-03 | 10:00 | 0.5 | 13:02 | 0 | 5 | 30 | Y | BC 01159 | pink | 594 | 241 | n/a | 55 | 55 | 8 | | | BT | adfluvial | 55 | CEJ | CEJ | Excellent | This fish was white spaghetti tag 01222. Incision could have been a bit lower. Difficult to cut through body wall. | |
| 56 | F | | Y | 29-Mar-03 | 10:30 | 0.3 | 13:02 | 0 | 5 | 34 | Y | BC 01158 | pink | 662 | 272 | n/a | 56 | 56 | 8 | | | BT | adfluvial | 56 | CEJ | PvD | Excellent | Some scarring on dorsal fin. | |
| 57 | F | | Y | 29-Mar-03 | 10:00 | -0.2 | 13:57 | -0.3 | 5 | 31 | Y | BC 01156 | pink | 632 | 274 | n/a | 57 | 57 | 7 | | | BT | adfluvial | 57 | JM | PvD | Excellent | Trickle of blood from antenna exit wound. Finish time may not be accurate. | |
| 58 | M | | Y | 29-Mar-03 | 10:30 | -0.3 | 14:01 | -0.3 | 5 | 32 | Y | BC 01161 | pink | 502 | 224 | n/a | 58 | 58 | 6 | Poor | | BT | adfluvial | 58 | JM | JR | Excellent | Thin body wall, fish was poked once on needle exit from body wall. Fish recovered quickly. | |
| 59 | F | | Y | 03-Apr-03 | 11:30 | 0.8 | 13:45 | 0.8 | 5 | 35 | Y | 229 | iky orang | 595 | 275 | n/a | 59 | 59 | 6 | | | BT | adfluvial | 59 | JR | CEJ | Excellent | Fish bleeding a bit more than usual from incision. Recovered nicely. | |
| 60 | M | | Y | 03-Apr-03 | 11:50 | 0.8 | 14:08 | 0.8 | 5 | 20 | Y | BC 01142 | pink | 632 | 303 | n/a | 60 | 60 | 8 | | | BT | adfluvial | 60 | JM | CEJ | Excellent | Right pectoral fin was partially missing from past injury. Antenna coating near end was frayed however, this incision was made on the wrong side of anterior fin. | |
| 61 | F | | Y | 03-Apr-03 | 12:00 | 0.8 | 14:31 | 0.8 | 5 | 36 | Y | BC 01145 | pink | 534 | 240 | n/a | 61 | 61 | 5 | | | BT | adfluvial | 61 | JR | JR | Excellent | Proper incision was made after and both incisions were stitched up and released. Fish was very vigorous at | |
| 62 | F | | Y | 03-Apr-03 | 12:05 | 0.8 | 14:40 | 0.8 | 5 | 37 | Y | BC 01161 | pink | 552 | 246 | n/a | 62 | 62 | 5 | Poor | | BT | adfluvial | 62 | JM | JR | Excellent | Great surgery. Dr Jim did a great job. | |
| 63 | F | | Y | 10-Apr-03 | 10:00 | 0.8 | 11:57 | 0.6 | 5 | 33 | Y | BC 01157 | pink | 493 | 225 | n/a | 63 | 63 | 4 | | | BT | adfluvial | 63 | JM | CEJ | Excellent | Fish bleeding a bit more than usual from incision. Recovered nicely. | |
| 64 | M | | Y | 10-Apr-03 | 10:30 | 0.6 | 12:14 | 0.6 | 5 | 18 | Y | BC 01160 | pink | 660 | 299 | n/a | 64 | 64 | 7 | | | BT | adfluvial | 64 | JM | JR | Excellent | During incision, part of intestine was scarred with the scalpal but did not penetrate. | |
| 65 | F | | Y | 17-Apr-03 | 10:15 | 0.6 | 12:54 | 0.1 | 5 | 23 | Y | BC 01155 | pink | 550 | 250 | n/a | 65 | 65 | 7 | | | BT | adfluvial | 65 | JM | CEJ | Excellent | Fish slow to recover. | |
| 66 | M | | Y | 17-Apr-03 | 11:40 | 0.3 | 13:08 | 0.1 | 7 | 76 | Y | BC 01141 | pink | 465 | 216 | n/a | 66 | 66 | 6 | Poor | | BT | adfluvial | 66 | JM | JR | Excellent | Antenna plastic cover came off of antenna about 6 inches from end. This should not affect the fish because it is covered at the exit with covering. | |

Table 5. Summary of detections and migratory behaviour for each radio-tagged char released in the BC Skagit River in 2001, 2002, and 2003.

| Fish No. | Chan | Code | First detected | | Last detected | | Loc (rkm) | Comments / Fate |
|----------------------------|------|------|----------------|-------|---------------|-------|--------------|---|
| | | | Date | Time | Date | Time | | |
| Fish Tagged in 2001 | | | | | | | | |
| 1 | 7 | 72 | 02-Oct-01 | 17:05 | | | 0.0 | released at Boundary Hole |
| | | | | | | | | Fate (end of field season 2001): Not detected after release. |
| | | | | | 07-Jun-02 | 8:00 | -5.0 | Mobile tracked off lowest access point |
| | | | | | 17-Jun-02 | 10:30 | -4.0 | Mobile tracked off of river mouth |
| | | | 24-Jun-02 | | 03-Jul-02 | 10:37 | 1.0 | holding downstream |
| | | | 04-Jul-02 | 17:06 | 04-Jul-02 | 18:03 | 1.0 | passes station 1 upstream |
| | | | 04-Sep-02 | 0:22 | 05-Sep-02 | 6:49 | 1.0 | Passed station 1 downstream KELT ? |
| | | | | | 05-Sep-02 | 9:34 | 0.0 | Mobile Track |
| | | | 05-Sep-02 | 11:50 | 09-Sep-02 | 23:38 | 1.0 | still holding downstream |
| | | | 10-Sep-02 | 9:20 | | | 0.0 | Mobile track by boat |
| | | | 11-Sep-02 | 5:56 | 14-Sep-02 | 6:04 | 1.0 | still holding downstream |
| | | | | | 14-Sep-02 | 9:40 | -0.1 | Boat track |
| | | | 14-Sep-02 | 22:15 | 21-Sep-02 | 1:36 | 1.0 | still holding downstream |
| | | | | | 25-Sep-02 | 6:54 | 0.0 | Mobile Track |
| | | | 26-Sep-02 | 20:20 | 03-Oct-02 | 6:32 | 1.0 | Detected downstream station 1 |
| | | | | | 03-Oct-02 | 11:00 | 0.0 | Mobile Track |
| | | | 03-Oct-02 | 21:14 | 12-Oct-02 | 6:38 | 1.0 | Detected downstream station 1 |
| | | | 12-Oct-02 | 15:05 | 20-Oct-02 | 3:53 | 1.0 | Detected downstream station 1 |
| | | | 20-Oct-02 | 19:19 | 30-Oct-02 | 9:44 | 1.0 | Still holding downstream |
| | | | | | 25-Oct-02 | 14:30 | 0.0 | Eric boat track |
| | | | | | 30-Oct-02 | 14:30 | 0.0 | Eric boat track |
| | | | | | 30-Oct-02 | 16:00 | 0.0 | Mobile Track |
| | | | 30-Oct-02 | 18:02 | 07-Nov-02 | 19:47 | 1.0 | Detected downstream station 1 |
| | | | 08-Nov-02 | 12:20 | 14-Nov-02 | 1:42 | 1.0 | Detected downstream station 1 |
| | | | | | 13-Nov-02 | 12:00 | 0.0 | Eric boat track |
| | | | 19-Nov-02 | 1:14 | 23-Nov-02 | 1:13 | 1.0 | Detected downstream station 1 |
| | | | | | | | | Fate (end of field season 2002): Fish held off of mouth and then moved up to spawn. After spawning it kelted on 5-Sept and went into a holding pattern in the lower river. |
| | | | | | 21-Jul-03 | 16:00 | 3.6 | Boat track (not seen by floaters) moved in river before Mar 1 |
| | | | 20-Sep-03 | 3:44 | 01-Oct-03 | 23:59 | 1.0 | Detected downstream station 1 (passed station 1 undetected) |
| | | | 09-Oct-03 | 3:46 | 09-Oct-03 | 4:21 | 1.0 | Detected downstream station 1 |
| | | | | | 09-Oct-03 | 16:00 | -1.0 | Truck track (mouth) |
| | | | 13-Oct-03 | 3:11 | 15-Oct-03 | 1:25 | 1.0 | Detected downstream station 1 (moved up and fell back each night) |
| | | | 15-Oct-03 | 19:26 | 20-Oct-03 | 10:11 | 1.0 | Detected downstream station 1 |
| | | | 20-Oct-03 | 11:47 | 23-Oct-03 | 4:09 | 1.0 | Detected downstream station 1 |
| | | | 24-Oct-03 | 17:35 | 29-Oct-03 | 18:20 | 1.0 | Detected downstream station 1 |
| | | | 30-Oct-03 | 22:37 | 03-Nov-03 | 6:07 | 1.0 | Detected downstream station 1 |
| | | | | | 04-Nov-03 | 11:51 | 0.0 | Raft track |
| | | | 10-Nov-03 | 23:43 | 12-Nov-03 | 22:01 | 1.0 | Detected downstream station 1 |
| | | | | | 13-Nov-03 | 8:22 | 0.0 | Mobile track |
| | | | 13-Nov-03 | 19:56 | 19-Nov-03 | 0:10 | 1.0 | Detected downstream station 1 |
| | | | | | | | | Fate (end of field season 2003) Fish was detected in river on 21-Jul and then dropped back to mouth where it was detected until 19-Nov. Did not spawn in 2003. |
| <hr/> | | | | | | | | |
| 2 | 5 | 52 | 02-Oct-01 | 17:05 | | | 0.0 | released at Boundary Hole |
| | | | | | 10-Oct-01 | 12:00 | 0.3 | detected during mobile survey |
| | | | | | 29-Oct-01 | | -2.0 | detected during mobile survey from 2nd boat launch |
| | | | | | | | | Fate (end of field season 2001): Unknown (moved into lake following short upstream migration following release) |
| | | | 22-Aug-02 | 23:32 | 23-Aug-02 | 6:46 | 1.0 | Passes station 1 upstream Very strong detection on Antenna 2 possibly because of scan time being same as tag pulse. |
| | | | | | | | | Passes station 8 downstream (Fish passed station 8 upstream sometime between 24-Aug and 15-Sept while it was still set to a scan time of 6.30 so the signal must have been missed) |
| | | | 13-Oct-02 | 1:33 | 13-Oct-02 | 1:47 | 18.1 | |
| | | | 13-Oct-02 | 21:02 | 20-Oct-02 | 6:32 | 1.0 | Passes station 1 downstream KELT |
| | | | 18-Oct-02 | 14:30 | | | 0.0 | Boat track by Eric |
| | | | 20-Oct-02 | 19:11 | 30-Oct-02 | 7:09 | 1.0 | Passes station 1 upstream and then drops back downstream again. |
| | | | | | 30-Oct-02 | 14:30 | 0.5 | Eric Mobile track |
| | | | | | 30-Oct-02 | 16:00 | 0.5 | Mobile track |
| | | | 30-Oct-02 | 18:34 | 30-Oct-02 | 20:08 | 1.0 | Detected passing station 1 upstream |
| | | | 31-Oct-02 | 0:58 | 08-Nov-02 | 6:14 | 1.0 | Detected passing station 1 downstream |
| | | | 08-Nov-02 | 13:21 | 17-Nov-02 | 3:06 | 1.0 | Detected downstream station 1 |
| | | | | | 13-Nov-02 | 12:07 | 0.5 | Eric Mobile track |
| | | | 17-Nov-02 | 17:32 | 23-Nov-02 | 20:38 | 1.0 | Detected downstream station 1 |
| | | | | | 18-Dec-03 | 11:44 | | Hozomeen Boat Launch by Eric |

Table 5. Summary of detections and migratory behaviour for each radio-tagged char released in the BC Skagit River in 2001, 2002, and 2003.

| Fish No. | Chan | Code | First detected | | Last detected | | Loc (rkm) | Comments / Fate |
|----------|------|------|----------------|-------|---------------|-------|-----------|--|
| | | | Date | Time | Date | Time | | |
| | | | | | | | | Fate (end of field season 2002): Fish moved up and spawned in the upper river above 18 km and then kelted on the 20-Oct. It then held in the lower river up until 18-Dec when it was detected on the US side at the Hozomeen Boat Launch. |
| | | | 02-Apr-03 | 0:35 | 19-Mar-03 | 12:46 | 1.0 | Silver Crk Basin by Eric |
| | | | 17-Apr-03 | 1:09 | 02-Apr-03 | 3:40 | 18.0 | Passes station 1 upstream |
| | | | 17-Apr-03 | 15:29 | 17-Apr-03 | 14:29 | 18.0 | In front of station 8 |
| | | | | | 20-Apr-03 | 4:01 | 18.0 | Passed station 8 upstream |
| | | | | | 20-Jun-03 | 11:38 | 23.7 | Mobile track |
| | | | | | 22-Jul-03 | 14:33 | 22.9 | Boat track (seen by floaters) |
| | | | | | 14-Sep-03 | 15:17 | 24.8 | Boat track (seen by floaters) |
| | | | | | 24-Oct-03 | 10:04 | 23.0 | Mobile track |
| | | | 31-Oct-03 | 23:47 | 31-Oct-03 | 23:53 | 18.0 | Passed station 8 downstream |
| | | | 01-Nov-03 | 3:57 | 01-Nov-03 | 4:09 | 1.0 | Passed station 1 downstream KELT |
| | | | | | 04-Nov-03 | 11:51 | 0.0 | Raft track |
| | | | 11-Nov-03 | 19:18 | 13-Nov-03 | 4:48 | 1.0 | Passed station 1 upstream |
| | | | 13-Nov-03 | 18:25 | 30-Nov-03 | 5:00 | 1.0 | Detected upstream station 1 |
| | | | | | | | | Fate (end of field season 2003): Fish moved into the river on 2-Apr and kelted on 1-Nov. It spawned during the week of 26-Oct at 23 km. It then held in the lower river and was last detected on 30-Nov. Fish probably spawned in this same location in 2002. |
| 3 | 7 | 70 | 02-Oct-01 | 17:05 | | | 0.0 | released at Boundary Hole |
| | | | | | 10-Oct-01 | 12:00 | 0.3 | detected during mobile survey and on receiver |
| | | | | | 15-Oct-01 | 8:00 | 0.3 | " |
| | | | | | 23-Oct-01 | 10:00 | 0.3 | " |
| | | | | | 29-Oct-01 | | 0.3 | " |
| | | | | | 05-Nov-01 | | 0.3 | " |
| | | | | | 12-Nov-01 | | 0.3 | " |
| | | | | | 16-Nov-01 | | 0.3 | " |
| | | | | | | | | Fate (end of field season 2001) Unknown (moved into lake after holding just below station 1 for over a month. |
| | | | | | 17-Jun-02 | | -2.0 | Mobile tracked off of 2nd boat launch near river mouth |
| | | | 26-Jun-02 | | 05-Jul-02 | 9:39 | 1.0 | holding downstream of station 1 |
| | | | | | 09-Jul-02 | 9:50 | -0.3 | mobile tracked at river mouth |
| | | | 12-Jul-02 | 5:52 | 14-Jul-02 | 21:20 | 1.0 | holding downstream of station 1 |
| | | | | | 18-Oct-02 | 14:30 | 0.0 | Boat track by Eric |
| | | | | | 25-Oct-02 | 14:30 | -0.5 | Boat track by Eric |
| | | | | | 30-Oct-02 | 14:30 | -0.5 | Boat track by Eric |
| | | | | | 13-Nov-02 | 12:00 | -0.5 | Boat track by Eric |
| | | | | | 22-Nov-02 | 13:57 | | North Stumpfields west side by Eric |
| | | | | | 18-Dec-03 | 11:42 | | Hozomeen Boat Launch by Eric |
| | | | | | | | | Fate (end of field season 2002): Fish held off of river mouth until 14-Jul and then moved somewhere else in the lake. It moved back on 18-Oct and held in the lower river until 18-Dec when it was detected on the US side at the Hozomeen Boat Launch. |
| | | | | | | | | Fate (end of field season 2003): Fish not detected during the 2003 field season. |
| 4 | 7 | 71 | 02-Oct-01 | 17:05 | | | 0.0 | released at Boundary Hole |
| | | | | | 23-Oct-01 | | 0.0 | moved back to release location after dropping back for a couple of weeks |
| | | | | | 05-Nov-01 | | -0.5 | detected during a mobile track |
| | | | | | | | | Fate (end of field season 2001): Unknown (was moving back towards lake at last detection) |
| | | | 03-May-02 | 7:49 | 03-May-02 | 12:44 | 18.0 | Detected downstream of station 8 |
| | | | 12-Sep-02 | 0:14 | 14-Sep-02 | 5:56 | 1.0 | Passed station 1 downstream KELT |
| | | | | | 14-Sep-02 | 9:40 | 0.1 | Boat track |
| | | | 14-Sep-02 | 20:32 | 19-Sep-02 | 22:47 | 1.0 | Still downstream station 1 |
| | | | 01-Oct-02 | 3:56 | 01-Oct-02 | 5:51 | 1.0 | First detected downstream station 1 |
| | | | | | 03-Oct-02 | 11:00 | 0.0 | Mobile Track |
| | | | | | 18-Oct-02 | 14:32 | 0.0 | Boat track by Eric |
| | | | | | 25-Oct-02 | 14:30 | -1.0 | Boat track by Eric |
| | | | | | 30-Oct-02 | 14:30 | -1.0 | Boat track by Eric |
| | | | | | 13-Nov-02 | 11:13 | -1.0 | Boat track by Eric |
| | | | | | | | | Fate (end of field season 2002): Fish moved up into the upper river and spawned somewhere below 18 km. It kelted on 14-Sep and held in the lower river. It was last detected on the 13-Nov. |
| | | | 06-Apr-03 | 11:14 | 08-Apr-03 | 21:42 | 1.0 | Passed station 1 upstream |

Table 5. Summary of detections and migratory behaviour for each radio-tagged char released in the BC Skagit River in 2001, 2002, and 2003.

| Fish No. | Chan | Code | First detected | | Last detected | | Loc (rkm) | Comments / Fate |
|----------|------|------|----------------|-------|---------------|-------|------------|--|
| | | | Date | Time | Date | Time | | |
| | | | 26-Jul-03 | 22:17 | 26-Jul-03 | 23:23 | 18.0 | Passed station 8 upstream |
| | | | 11-Sep-03 | 23:42 | 13-Sep-03 | 4:54 | 32.5 | Detected downstream station 9 |
| | | | | | 14-Sep-03 | 10:35 | 31.0 | Mobile Track (floaters missed) |
| | | | | | 24-Oct-03 | 8:08 | 30.5 | Mobile Track |
| | | | | | | | | Fate (end of field season 2003): Fish moved into the river on 8-Apr and was detected in the upper river where it most likely spawned at 30.5 km. Fish had not left the system by the time the stations were removed on 2-Dec. |
| 5 | 7 | 73 | 02-Oct-01 | 17:05 | | | 0.0 | released at Boundary Hole |
| | | | | | 12-Oct-01 | 14:08 | 1.5 | Moved upstream of station 1 |
| | | | | | 15-Oct-01 | 5:08 | 18.0 | Moved upstream of station 8 |
| | | | | | | | | the river was mobile tracked up to 20.5 km however the fish was not located up to this point |
| | | | | | 29-Oct-01 | | above 20.5 | |
| | | | | | | | | Fate (end of field season 2001): Fish moved upstream to spawn and either perished on the spawning grounds or was still upstream of station 8 when it was finally removed |
| | | | | | | | | Fate (end of field season 2002): Refer to note above on 14-Sept. |
| | | | | | | | | Tag detected from high on cliff bank overlooking river. Fish probably died after spawning in Oct of 01 above 21 km. Tag has yet to be recovered. |
| | | | | | 11-Apr-03 | 13:03 | 21.0 | |
| | | | | | 01-May-03 | 13:00 | 21.0 | Detected burried in the sand at LWD jam. After much digging, the tag could not be recovered. |
| 6 | 5 | 51 | 10-Oct-01 | 12:25 | | | 0.0 | released at Boundary Hole |
| | | | | | 29-Oct-01 | | 1.0 | fish was detected by the station and mobile tracking |
| | | | | | 29-Oct-01 | | 1.0 | fish was seen swimming by CEJ and Pier during a snorkle float. Fish was in good shape and antenna could be observed trailing behind fish. |
| | | | | | 05-Nov-01 | | 1.0 | " |
| | | | | | 12-Nov-01 | | 1.0 | " |
| | | | | | 01-Dec-01 | | 1.0 | fish was still at this location when the reciever was removed for the winter. |
| | | | | | | | | Fate (end of field season 2001): Fish was in a holding pattern below station 1 when it was removed. |
| | | | 28-Jun-02 | | 02-Jul-02 | | 1.0 | passes station 1 upstream |
| | | | | | 18-Jul-02 | | 8.7 | Mobile track at high bank |
| | | | | | 27-Jul-02 | | 8.7 | Still at high bank |
| | | | | | 01-Aug-02 | | 7.3 | Mobile track below high bank |
| | | | | | 13-Aug-02 | 12:38 | 7.8 | Recaptured and tag not noticed. Fish was radio tagged with 7-35 and became fish #18. However this was not noticed till next recapture. |
| | | | | | 26-Aug-02 | 14:40 | 9.0 | Recapture by Jack Mussell and found to have 2 radio tags in fish. This is also fish # 18 Channel/Code 7-35 |
| | | | 27-Sep-02 | 19:49 | 03-Oct-02 | 4:29 | 1.0 | Passes station 1 downstream KELT |
| | | | | | 03-Oct-02 | 11:00 | 0.0 | Mobile Track |
| | | | 04-Oct-02 | 2:22 | 12-Oct-02 | 4:20 | 1.0 | Detected downstream station 1 |
| | | | 12-Oct-02 | 19:58 | 14-Oct-02 | 3:32 | 1.0 | Detected downstream station 1 |
| | | | | | 18-Oct-02 | 14:30 | 0.0 | Boat track by Eric |
| | | | 21-Oct-02 | 0:16 | 30-Oct-02 | 14:42 | 1.0 | Detected downstream station 1 and then moved upstream and then back downstream again. |
| | | | | | 25-Oct-02 | 14:30 | 0.0 | Eric boat track |
| | | | | | 30-Oct-02 | 14:30 | 0.5 | Eric boat track |
| | | | | | 30-Oct-02 | 16:00 | 0.5 | Mobile track |
| | | | 30-Oct-02 | 16:46 | 08-Nov-02 | 8:41 | 1.0 | Detected downstream station 1 |
| | | | 08-Nov-02 | 10:34 | 17-Nov-02 | 6:57 | 1.0 | Detected downstream station 1 |
| | | | | | 13-Nov-02 | 12:10 | 0.5 | Eric boat track |
| | | | 17-Nov-02 | 2:32 | 23-Nov-02 | 19:49 | 1.0 | Detected downstream station 1 |
| | | | | | | | | Fate (end of field season 2002): This is also fish #18 Fish moved up and spawned around 9.0 km and kelted on the 3-Oct. It then held in the lower river and was last detected on 23-Nov. |
| | | | 23-May-03 | 23:20 | 24-May-03 | 5:32 | 1.0 | Passed station 1 upstream |
| | | | | | 21-Jul-03 | 16:19 | 2.5 | Boat track (seen by floaters) |
| | | | | | 16-Sep-03 | 14:02 | 2.7 | Boat track (seen by floaters) |
| | | | 01-Oct-03 | 21:51 | 01-Oct-03 | 21:53 | 1.0 | Passed station 1 downstream |
| | | | | | 09-Oct-03 | 16:00 | -1.0 | Truck track (mouth) |
| | | | 14-Oct-03 | 23:43 | 15-Oct-03 | 2:00 | 1.0 | detected downstream station 1 |
| | | | | | 15-Oct-03 | 14:51 | -1.0 | Truck track (mouth) |
| | | | 16-Oct-03 | 1:30 | 20-Oct-03 | 10:20 | 1.0 | detected downstream station 1 |

Table 5. Summary of detections and migratory behaviour for each radio-tagged char released in the BC Skagit River in 2001, 2002, and 2003.

| Fish No. | Chan | Code | First detected | | Last detected | | Loc (rkm) | Comments / Fate |
|---|------|------|----------------|-------|---------------|-------|-----------|--|
| | | | Date | Time | Date | Time | | |
| | | | 20-Oct-03 | 10:54 | 24-Oct-03 | 8:35 | 1.0 | detected downstream station 1 |
| | | | 24-Oct-03 | 18:40 | 26-Oct-03 | 6:49 | 1.0 | Passed station 1 upstream |
| | | | | | 30-Oct-03 | 11:38 | 8.3 | Truck track |
| | | | | | 04-Nov-03 | 10:14 | 8.6 | Raft track |
| | | | | | 13-Nov-03 | 8:01 | 8.6 | Truck track |
| <p>Fate (end of field season 2003): Fish first moved into the river on 24-May and then dropped back into the lower river again until it moved up again on 26-Oct. It most likely spawned around 8.6 km where it was last detected on 13-Nov. Fish had not left system by the time the stations were removed on 2-Dec. Interesting to note that this fish spawned in the same location as 2002.</p> | | | | | | | | |
| 7 | 5 | 50 | 10-Oct-01 | 12:25 | | | 0.0 | released at Boundary Hole |
| | | | | | 29-Oct-01 | | -2.0 | fish detected by mobile tracking at 1st Boat Launch |
| <p>Fate (end of field season 2001): Fish dropped back to the river mouth and was detected at that location</p> | | | | | | | | |
| | | | 01-Sep-02 | 2:06 | 01-Sep-02 | 3:10 | 18.0 | Passed station 8 upstream, possibly passed station 1 while it was down for a few days. |
| | | | 13-Oct-02 | 5:29 | 13-Oct-02 | 5:37 | 18.1 | Passed station 8 downstream |
| | | | 13-Oct-02 | 21:48 | 16-Oct-02 | 23:18 | 1.0 | Passed station 1 downstream KELT |
| | | | | | 18-Oct-02 | 14:30 | 0.0 | Boat track by Eric |
| | | | | | 25-Oct-02 | 14:30 | -1.0 | Boat track by Eric |
| | | | | | 30-Oct-02 | 14:30 | -1.0 | Boat track by Eric |
| | | | | | 13-Nov-02 | 11:31 | -1.0 | Boat track by Eric |
| | | | | | 22-Nov-02 | 14:04 | | North stumpfields west side by Eric |
| <p>Fate (end of field season 2002): This fish moved up and spawned in the upper river above 18 km and then kelted on 16-Oct. It then held in the lower river and was last detected on 22-Nov on the US side at the river mouth.</p> | | | | | | | | |
| | | | | | 16-Jan-03 | 10:35 | | Hoxomeen Boat launch by Eric |
| | | | 03-May-03 | 22:13 | 05-May-03 | 1:58 | 1.0 | Passed station 1 upstream |
| | | | 30-Jul-03 | 0:59 | 30-Jul-03 | 1:55 | 18.0 | Passed station 8 upstream |
| | | | 02-Sep-03 | 1:22 | 02-Sep-03 | 1:32 | 18.0 | Passed station 8 downstream |
| | | | 04-Sep-03 | 20:30 | 04-Sep-03 | 20:30 | 1.0 | Passed station 1 downstream |
| | | | | | 09-Oct-03 | 16:00 | -1.0 | Truck track (mouth) |
| | | | 11-Oct-03 | 23:06 | 12-Oct-03 | 0:07 | 1.0 | Passed station 1 upstream and back downstream |
| | | | 13-Oct-03 | 3:01 | 13-Oct-03 | 3:49 | 1.0 | Passed station 1 upstream |
| | | | 15-Oct-03 | 23:11 | 16-Oct-03 | 0:43 | 18.0 | Passed station 8 upstream |
| | | | 19-Oct-03 | 15:48 | 19-Oct-03 | 17:23 | 32.5 | Detected downstream station 9 |
| | | | 24-Oct-03 | 5:30 | 24-Oct-03 | 5:35 | 18.0 | Passed station 8 downstream |
| | | | 26-Oct-03 | 5:57 | 26-Oct-03 | 5:57 | 1.0 | Passed station 1 downstream KELT |
| <p>Fate (end of field season 2003): Fish moved into river on 5-May and hung out in the upper river until 2-Sept when it moved back to the lake. On 13-Oct it returned to the river and kelted on the 26-Oct. It spawned during the week of 19-Oct downstream of 32.5 km. This fish spawned above 18 km last year as well.</p> | | | | | | | | |
| 8 | 7 | 74 | 10-Oct-01 | 12:25 | | | 0.0 | released at Boundary Hold |
| <p>fish was not detected again after the initial release</p> | | | | | | | | |
| <p>Fate (end of field season 2001): Unknown (fish must have dropped back to lake)</p> | | | | | | | | |
| | | | | | 26-May-02 | 2:50 | 0.5 | holding |
| | | | | | 30-May-02 | 4:04 | 0.5 | holding |
| | | | | | 07-Jun-02 | 8:31 | 0.5 | holding |
| | | | | | 17-Jun-02 | | 0.5 | holding |
| | | | | | 24-Jun-02 | | 0.5 | holding |
| | | | 03-Jul-02 | 15:12 | 07-Jul-02 | 4:50 | 1.0 | passes station 1 upstream |
| | | | | | 09-Jul-02 | 5:03 | 1.0 | passes back downstream station 1 |
| | | | | | 11-Jul-02 | 9:08 | 1.0 | holding downstream station 1 |
| | | | | | 05-Sep-02 | 9:34 | 0.0 | Mobile Track |
| | | | | | 10-Sep-02 | 9:20 | 0.0 | Mobile Track by boat |
| | | | | | 14-Sep-02 | 8:38 | 0.1 | Boat track |
| | | | | | 25-Sep-02 | 6:54 | 0.0 | Mobile track |
| | | | | | 03-Oct-02 | 11:00 | 0.0 | Mobile Track |
| | | | | | 12-Oct-02 | 15:05 | 0.0 | Boat track |
| | | | | | 18-Oct-02 | 14:30 | 0.0 | Boat track by Eric |
| | | | | | 25-Oct-02 | 14:30 | 0.0 | Boat track by Eric |
| | | | | | 30-Oct-02 | 14:30 | 0.0 | Boat track by Eric |
| | | | | | 30-Oct-02 | 16:00 | 0.0 | Mobile track |
| | | | | | 13-Nov-02 | 12:11 | 0.0 | Boat track by Eric |

Table 5. Summary of detections and migratory behaviour for each radio-tagged char released in the BC Skagit River in 2001, 2002, and 2003.

| Fish No. | Chan | Code | First detected | | Last detected | | Loc (rkm) | Comments / Fate |
|----------------------------|------|------|----------------|-------|---------------|-------|-----------|---|
| | | | Date | Time | Date | Time | | |
| | | | | | 02-Nov-02 | 14:06 | | North stumpfields west side by Eric |
| | | | | | 18-Dec-03 | 11:49 | | Silver Crk Basin by Eric |
| | | | | | 06-Mar-03 | 12:00 | | Tag recovered at rkm 0.0 |
| | | | | | | | | Fate (end of field season 2002): Fish held in lower river and then moved somewhere in the lake after 11-Jul. It returned around the 5-Sept and held in the lower river until 18-Dec when it was detected on the US side at Silver Crk Basin. At some point in time the fish likely died or was killed; the tag was recovered on 06 March 2003 in shallow water at rkm 0.0. |
| 9 | 5 | 56 | 15-Oct-01 | 13:15 | | | 0.0 | released at Boundary Hole |
| | | | | | 29-Oct-01 | | -2.0 | fish was detected by mobile tracking at 2nd Boat Launch |
| | | | | | | | | Fate (end of field season 2001): Unknown (Fish was last detected holding at the river mouth |
| | | | 29-Sep-02 | 3:04 | 03-Oct-02 | 6:09 | 1.0 | Passes station 1 downstream (Fish must have been in river before stations were put in between 1.5 and 8.5 km or passed upstream station 1 while the station was down. KELT |
| | | | | | 03-Oct-02 | 11:00 | 0.0 | Mobile Track |
| | | | 03-Oct-02 | 20:43 | 12-Oct-02 | 9:28 | 1.0 | Detected d/s station 1 |
| | | | | | 12-Oct-02 | 15:00 | 0.3 | Boat track |
| | | | 12-Oct-02 | 6:32 | 20-Oct-02 | 7:26 | 1.0 | Detected downstream station 1 |
| | | | | | 18-Oct-02 | 14:30 | 0.0 | Boat track by Eric |
| | | | 20-Oct-02 | 19:00 | 30-Oct-02 | 14:06 | 1.0 | Detected downstream station 1 |
| | | | | | 25-Oct-02 | 14:30 | 0.5 | Eric boat track |
| | | | | | 30-Oct-02 | 14:30 | 0.5 | Eric boat track |
| | | | | | 30-Oct-02 | 16:00 | 0.5 | Mobile Track |
| | | | 30-Oct-02 | 17:32 | 08-Nov-02 | 6:53 | 1.0 | Detected downstream station 1 |
| | | | 08-Nov-02 | 12:06 | 17-Nov-02 | 6:14 | 1.0 | Detected downstream station 1 |
| | | | | | 13-Nov-02 | 12:07 | 0.5 | Eric boat track |
| | | | | | 22-Nov-02 | 14:09 | | North stumpfields east side by Eric |
| | | | 17-Nov-02 | 16:56 | 24-Nov-02 | 11:31 | 1.0 | Detected downstream station 1 |
| | | | | | 18-Dec-02 | 11:48 | | Silver Crk Basin by Eric |
| | | | | | | | | Fate (end of field season 2002): Fish spawned during the week of 26-Sept and kelted on 3-Oct. Fish was not detected in the river so it must have been in the system prior to the stations being installed or passed station 1 undetected. |
| | | | | | 17-Apr-03 | 14:49 | -4.0 | Truck Track |
| | | | | | 23-May-03 | 10:00 | -2.5 | Truck Track |
| | | | | | 06-Oct-03 | 12:10 | 0.0 | Eric boat track |
| | | | | | 09-Oct-03 | 16:00 | -1.0 | Truck track (mouth) |
| | | | | | 15-Oct-03 | 14:51 | -1.0 | Truck track (mouth) |
| | | | | | 20-Oct-03 | 11:10 | -1.0 | Truck track (mouth) |
| | | | | | | | | Fate (end of field season 2003): Fish was detected at river mouth on 17 of Apr and last detected at the river mouth on 20-Oct. Fish did not enter the river to spawn during 2003. |
| 10 | 7 | 79 | 23-Oct-01 | 14:00 | | | 15.3 | kelt tagged and released from upstream location at firsh pullout |
| | | | | | 27-Oct-01 | 6:04 | 1.3 | fish kelted and passed station 1 downstream |
| | | | | | | | | Fate (end of field season 2001): Fish kelted passed station 1 and headed into the lake |
| | | | | | | | | This fish could have been recaptured at this location again and the tag not working. Obvious incision and antenna hole. This fish was then sampled and called NT 31. This is one of two fish that we are missing from last year. |
| | | | | | 14-Sep-02 | 8:30 | 0.1 | |
| | | | | | | | | Fate (end of field season 2002): Refer to comment above on 14-Sept. This could now be fish #55 |
| Fish tagged in 2002 | | | | | | | | |
| 11 | 5 | 55 | | | 08-May-02 | 14:40 | -0.3 | release at campground |
| | | | 30-Jun-02 | | 03-Jul-02 | | 1.0 | Detected downstream station 1 |
| | | | 07-Jul-02 | 10:37 | 09-Jul-02 | 9:58 | 1.0 | Still holding downstream |
| | | | 27-Jul-02 | 9:45 | 01-Aug-02 | 9:48 | 1.0 | Passes station 1 upstream |
| | | | | | 13-Aug-02 | 6:34 | 1.0 | station and mobile track |
| | | | | | | | | recaptured; antenna clipped off and large scar where antenna exit was (see recaps sheet.) |
| | | | 19-Aug-02 | 16:33 | 14-Aug-02 | 7:30 | 1.0 | Holding downstream of station |
| | | | | | 26-Aug-02 | | 1.0 | still holding downstream |
| | | | | | 05-Sep-02 | | 1.0 | still holding downstream |
| | | | | | 05-Sep-02 | 9:20 | 1.0 | Mobile Track |

Table 5. Summary of detections and migratory behaviour for each radio-tagged char released in the BC Skagit River in 2001, 2002, and 2003.

| Fish No. | Chan | Code | First detected | | Last detected | | Loc (rkm) | Comments / Fate |
|----------|------|------|----------------|-------|---------------|-------|-----------|---|
| | | | Date | Time | Date | Time | | |
| | | | | | 10-Sep-02 | 7:40 | 0.9 | Tag recovered by crew on beach. When tag was "recaptured" on 14 Aug, it could not have been in the fish. An angler likely pulled the antenna out of the fish and somehow it healed up and survived. Tag removed around the 1-Aug? |
| | | | | | 13-Oct-02 | 9:37 | 15.8 | Visual by floaters. Could still see scar but healed well. Only radio tag size fish with white spaghetti tag. Fate (end of field season 2002): Fish was recaptured on 14-Aug and it was noted that there was a large scar and no antenna leaving the fish. The tag was later recovered on 10-Sept on the beach at the same location. Fish was seen by floaters on the 13-Oct at 15.8 km. It was in good shape and the scar was healing nicely. White spaghetti tag was still intact. |
| 12 | 7 | 75 | 27-Jul-02 | 16:25 | | | -0.3 | released at campground Silver Crk Basin by Eric |
| | | | | | 18-Dec-03 | 11:49 | | |
| | | | | | 19-Mar-03 | 12:46 | | Fate (end of field season 2002): Fish dropped back into lake after release and was not detected again until 18-Dec on the US side at Silver Crk Basin. |
| | | | | | 10-Apr-03 | 14:45 | -4.0 | Silver Crk Basin by Eric Mobile track |
| | | | | | | | | Fate (end of field season 2003): Fish was last detected at the river mouth on 10-Apr. It did not enter the river to spawn during 2003. I have a feeling that this fish uses another trib of Ross Lake to spawn. |
| 13 | | | | | 27-Jul-02 | 11:30 | 0.5 | Fate (end of field season 2002): Mortality. Fish did not recover from surgery. |
| 14 | 7 | 78 | 13-Aug-02 | 9:20 | | | 8.7 | Release |
| | | | | | 05-Sep-02 | 8:52 | 8.7 | Mobile Track |
| | | | | | 10-Sep-02 | 14:20 | 8.7 | Mobile Track by truck |
| | | | | | 14-Sep-02 | 11:20 | 8.7 | Mobile Track by truck |
| | | | | | 25-Sep-02 | 10:06 | 8.7 | Mobile Track |
| | | | | | 03-Oct-02 | 11:50 | 15.5 | Mobile Track |
| | | | 06-Oct-02 | 1:04 | 06-Oct-02 | 3:03 | 18.1 | Passes station 8 upstream |
| | | | | | | | | Fate (end of field season 2002): Fish held in the mid river until 3-Oct and then it moved into the upper river above 18 km to spawn. The stations were removed on 28-Oct and at that time the fish had still not kelted. |
| | | | | | 11-Apr-03 | 8:27 | 31.0 | Tag detected in log jam but could not be recovered. Fish must have died after spawning upstream of 31 km after Oct 6th. |
| | | | | | 20-Jun-03 | 9:08 | 31.0 | Same spot confirmed dead. |
| 15 | 7 | 76 | 13-Aug-02 | 9:49 | | | 8.7 | Release |
| | | | 22-Aug-02 | 23:14 | 26-Aug-02 | 14:29 | 1.0 | Passes station 1 downstream |
| | | | | | 05-Sep-02 | 10:07 | 1.0 | Still downstream station 1 |
| | | | | | 05-Sep-02 | 9:20 | 0.6 | Mobile Track |
| | | | 05-Sep-02 | 10:52 | 10-Sep-02 | 13:58 | 1.0 | Still downstream station 1 |
| | | | 10-Sep-02 | 14:16 | 14-Sep-02 | 10:23 | 1.0 | Still downstream station 1 |
| | | | | | 14-Sep-02 | 8:00 | 1.0 | Boat track |
| | | | 21-Sep-02 | 18:55 | 23-Sep-02 | 3:27 | 1.0 | Detected downstream station 1 |
| | | | 25-Sep-02 | 7:28 | 03-Oct-02 | 9:32 | 1.0 | Detected downstream station 1 |
| | | | | | 03-Oct-02 | 11:13 | 0.7 | Mobile Track |
| | | | 03-Oct-02 | 10:10 | 12-Oct-02 | 16:10 | 1.0 | Detected downstream station 1 |
| | | | 12-Oct-02 | 16:33 | 20-Oct-02 | 11:08 | 1.0 | Detected downstream station 1 |
| | | | 20-Oct-02 | 11:22 | 30-Oct-02 | 16:50 | 1.0 | Detected downstream station 1 |
| | | | 30-Oct-02 | 16:16 | 08-Nov-02 | 9:35 | 1.0 | Detected downstream station 1 |
| | | | 08-Nov-02 | 9:52 | 17-Nov-02 | 10:35 | 1.0 | Detected downstream station 1 |
| | | | 17-Nov-02 | 10:56 | 28-Nov-02 | 14:55 | 1.0 | Detected downstream station 1 |
| | | | | | 06-Mar-03 | 12:00 | 1.0 | Tag recovered at rkm 0.8 |
| | | | | | | | | Fate (end of field season 2002): Fish dropped back after tagging into the lower river and was last detected there through the fall. Fish died or was killed at some point in the fall/winter. Tag was recovered on 06 March 2003 at rkm 0.8. |
| 16 | 7 | 77 | 13-Aug-02 | 11:47 | | | 7.8 | Release |
| | | | | | 05-Sep-02 | 8:51 | 9.0 | Mobile |
| | | | | | 10-Sep-02 | 14:20 | 8.7 | Mobile Track by truck |
| | | | | | 03-Oct-02 | pm | | Detected by Eric at mouth of Big Beaver Crk (fish somehow made it past lower station without being detected) KELT |

Table 5. Summary of detections and migratory behaviour for each radio-tagged char released in the BC Skagit River in 2001, 2002, and 2003.

| Fish No. | Chan | Code | First detected | | Last detected | | Loc (rkm) | Comments / Fate |
|---|------|-----------|----------------|-------|---------------|-------|-----------|---|
| | | | Date | Time | Date | Time | | |
| <p>Fate (end of field season 2002): Fish moved upstream to spawn after being tagged and then kelted and was last detected on the US side on 3-Oct at Big Beaver Crk.</p> | | | | | | | | |
| | | | 18-Jun-03 | 21:37 | 14-Jun-03 | 9:45 | 0.1 | Truck track |
| | | | 20-Jun-03 | 16:25 | 20-Jun-03 | 14:01 | 1.0 | Detected downstream station 1 |
| | | | | | 21-Jun-03 | 2:25 | 1.0 | Passed station 1 upstream |
| | | | | | 21-Jul-03 | 13:32 | 9.0 | Boat track (seen by floaters) |
| | | | | | 12-Aug-03 | 12:04 | 9.0 | Truck track |
| | | 31-Aug-03 | 21:33 | | 01-Sep-03 | 23:46 | 18.0 | Detected downstream station 8 |
| | | | | | 15-Sep-03 | 16:17 | 8.8 | Boat track (missed by floaters) |
| | | 28-Sep-03 | 23:25 | | 29-Sep-03 | 0:20 | 18.0 | Passed station 8 upstream |
| | | 03-Oct-03 | 3:41 | | 03-Oct-03 | 4:48 | 32.5 | Detected downstream station 9 |
| | | 03-Oct-03 | 22:00 | | 03-Oct-03 | 23:07 | 32.5 | Moved upstream in Sumallo |
| | | 04-Oct-03 | 2:26 | | 04-Oct-03 | 3:28 | 32.5 | Moved back downstream of station 9 |
| | | 15-Oct-03 | 22:52 | | 15-Oct-03 | 23:00 | 18.0 | Passed station 8 downstream |
| | | 16-Oct-03 | 4:50 | | 16-Oct-03 | 4:53 | 1.0 | Passed station 1 downstream KELT |
| <p>Fate (end of field season 2003): Fish moved into river on 21-Jun and kelted on 16-Oct. It spawned during the week of 12-Oct downstream of 32.5 km.</p> | | | | | | | | |
| 17 | 5 | 57 | 13-Aug-02 | 12:08 | | | 7.8 | Release |
| | | | 15-Aug-02 | 3:01 | 15-Aug-02 | 3:21 | 1.0 | Passes station 1 downstream |
| | | | | | 22-Aug-02 | ? | ? | Detected by Eric Jeans at Little Beaver Crk Arm during mobile track. |
| | | | 24-Sep-02 | 21:39 | 24-Sep-02 | 23:37 | 1.0 | Passes station 1 upstream |
| | | | | | 13-Oct-02 | 13:00 | 10.0 | Tag recovered from riverbank on top of log. No fish remains. Possibly attacked by a predator or fisherman? |
| <p>Fate (end of field season 2002): Fish dropped back into lake after being tagged and was detected on the US side at Little Beaver Crk Arm on 22-Aug. It then moved back into the Skagit river on 24-Sept to spawn. The tag was found on the 13-Oct at 10 km but there was no sign of the fish. Refer to the comments above.</p> | | | | | | | | |
| 18 | 7 | 35 | 13-Aug-02 | 12:38 | | | 7.8 | Release |
| <p>THIS IS ALSO FISH #6</p> | | | | | | | | |
| | | | | | 26-Aug-02 | 14:40 | 9.0 | Recapture by Jack Mussell. This fish is also Fish #6 Channel/Code 5-51 |
| | | | 27-Sep-02 | 19:44 | 02-Oct-02 | 23:27 | 1.0 | Passes station 1 downstream KELT? |
| | | | | | 03-Oct-02 | 11:00 | 0.0 | Mobile Track |
| | | | 04-Oct-02 | 2:33 | 12-Oct-02 | 4:25 | 1.0 | Detected d/s station 1 |
| | | | 12-Oct-02 | 20:27 | 14-Oct-02 | 3:17 | 1.0 | Detected d/s station 1 |
| | | | 21-Oct-02 | 0:22 | 30-Oct-02 | 14:43 | 1.0 | Detected d/s station 1 |
| | | | | | 30-Oct-02 | 14:30 | 0.5 | Eric mobile track |
| | | | | | 30-Oct-02 | 16:00 | 0.5 | Mobile Track |
| | | | 30-Oct-02 | 18:52 | 08-Nov-02 | 7:08 | 1.0 | Detected d/s station 1 |
| | | | 08-Nov-02 | 17:55 | 17-Nov-02 | 6:56 | 1.0 | Detected d/s station 1 |
| | | | | | 13-Nov-02 | 12:10 | 0.5 | Eric mobile track |
| | | | 17-Nov-02 | 13:20 | 23-Nov-02 | 19:55 | 1 | Detected d/s station 1 |
| <p>Fate (end of field season 2002): This is also fish #6 (5-51) Fish was recaptured in the mid river on 13 and 26-Aug. It spawned around 9.0 km and kelted on 2-Oct. It then held in the lower river and was last detected on 23-Nov.</p> | | | | | | | | |
| | | | | | 19-Mar-03 | 13:12 | | Jack Point by Eric |
| | | | | | 21-Jul-03 | 16:19 | 2.5 | Boat track seen by floaters |
| | | | | | 16-Sep-03 | 14:02 | 2.7 | Boat track seen by floaters |
| | | | 01-Oct-03 | 21:52 | 01-Oct-03 | 21:52 | 1.0 | Passed station 1 downstream |
| | | | | | 15-Oct-03 | 14:51 | -1.0 | Truck track (mouth) |
| | | | 19-Oct-03 | 1:26 | 20-Oct-03 | 10:29 | 1.0 | Detected downstream station 1 |
| | | | 24-Oct-03 | 6:23 | 24-Oct-03 | 8:34 | 1.0 | Detected downstream station 1 |
| | | | 24-Oct-03 | 19:45 | 27-Oct-03 | 8:30 | 1.0 | Passed station 1 upstream |
| | | | | | 30-Oct-03 | 11:40 | 8.3 | Truck track |
| | | | | | 04-Nov-03 | 10:14 | 8.6 | Raft track |
| | | | | | 13-Nov-03 | 8:01 | 8.6 | Truck track |
| <p>Fate (end of field season 2003): Fish first moved into the river on 24-May and then dropped back into the lower river again until it moved up again on 26-Oct. It most likely spawned around 8.6 km where it was last detected on 13-Nov. Fish had not left system by the time the stations were removed on 2-Dec. Interesting to note that this fish spawned in the same location as 2002.</p> | | | | | | | | |

Table 5. Summary of detections and migratory behaviour for each radio-tagged char released in the BC Skagit River in 2001, 2002, and 2003.

| Fish No. | Chan | Code | First detected | | Last detected | | Loc (rkm) | Comments / Fate |
|----------|------|------|----------------|-------|---------------|-------|-----------|--|
| | | | Date | Time | Date | Time | | |
| 19 | 7 | 44 | 13-Aug-02 | 12:46 | | | 7.8 | Release |
| | | | | | 03-Sep-02 | 12:00 | 15.1 | RT Fish #19 RECAPTURED by angler on 03 Sept., 2.9 kms downstream of 26-mi bridge (7.3 kms upstream from release point on 13 Aug). Angler stated that he caught the fish on a lure, and that the hook badly damaged the eye, but that the fish did swim off (slowly) at release. The angler did see the radio tag antenna still in fish. This recapture was called in to Troy by angler (Robert Holland; 604-277-3943). |
| | | | | | 25-Sep-02 | 14:41 | 15.4 | Boat track |
| | | | | | 03-Oct-02 | 11:50 | 15.5 | Mobile Track |
| | | | | | 13-Oct-02 | 9:50 | 15.0 | Boat track |
| | | | 15-Oct-02 | 0:33 | 15-Oct-02 | 0:44 | 1.0 | Passes station 1 downstream KELT |
| | | | | | | | | Fate (end of field season 2002): Fish was recaptured after release on the 3-Sept. (See comment above) It spawned around 15.5 km and kelted on 15-Oct. That was the last time it was detected so it must have moved into the lake on the US side. |
| | | | 08-Jul-03 | 23:07 | 10-Apr-03 | 14:52 | -5.0 | Mobile Track at river mouth |
| | | | | | 10-Jul-03 | 1:32 | 1.0 | Detected downstream station 1 |
| | | | | | 10-Jul-03 | 11:54 | 0.0 | Mobile track |
| | | | | | | | | Fate (end of field season 2003): Fish was first detected on 10-Apr at river mouth and was last detected on 10-Jul at the river mouth. Fish did not enter the river to spawn during 2003. |
| 20 | 7 | 38 | 13-Aug-02 | 16:02 | | | 5.5 | Release |
| | | | 20-Sep-02 | 1:39 | 20-Sep-02 | 1:44 | 1.0 | Passes station 1 downstream KELT |
| | | | | | 25-Sep-02 | 6:54 | 0.0 | Mobile Track |
| | | | 25-Sep-02 | 20:27 | 03-Oct-02 | 5:29 | 1.0 | Detected downstream station 1 |
| | | | | | 03-Oct-02 | 11:00 | 0.0 | Mobile Track |
| | | | 03-Oct-02 | 19:49 | 12-Oct-02 | 5:30 | 1.0 | Detected downstream station 1 |
| | | | | | 12-Oct-02 | 15:05 | 0.0 | Boat track |
| | | | 13-Oct-02 | 23:49 | 17-Oct-02 | 2:42 | 1.0 | Detected downstream station 1 |
| | | | | | 18-Oct-02 | 14:30 | 0.0 | Boat track by Eric |
| | | | | | 25-Oct-02 | 14:30 | -1.0 | Boat track by Eric |
| | | | | | 30-Oct-02 | 14:30 | -1.0 | Boat track by Eric |
| | | | | | 13-Nov-02 | 11:32 | -1.0 | Boat track by Eric |
| | | | | | 22-Nov-02 | 14:06 | | North stumppields west side by Eric |
| | | | | | | | | Fate (end of field season 2002): After release, fish was first detected kelting on the 20-Sep. It then held in the lower river untill 22-Nov when it was detected on the US side off the river mouth. |
| | | | | | 19-Mar-03 | 12:46 | | Silver Crk Basin by Eric |
| | | | | | 10-Apr-03 | 12:30 | 0.0 | Mobile track (seen by floater) |
| | | | | | 17-Apr-03 | 12:30 | 0.0 | recap by Randy (Mobile Track) |
| | | | 26-Apr-03 | 23:29 | 27-Apr-03 | 21:29 | 1.0 | Passed station 1 upstream |
| | | | | | 14-Jun-03 | 9:39 | 0.5 | Mobile track (passed station 1 without being detected?) |
| | | | 25-Jun-03 | 21:55 | 25-Jun-03 | 23:01 | 1.0 | Passed station 1 upstream |
| | | | | | 21-Jul-03 | 14:31 | 7.2 | Boat track (not seen by floaters) |
| | | | | | 16-Sep-03 | 10:00 | 7.4 | Boat track (0.3km up Nepopekum trib) |
| | | | | | 09-Oct-03 | 9:55 | 7.0 | Tag recovered by floaters on log (fell prey to some eagle/ otter/ bear) |
| | | | | | | | | Fate (end of field season 2003) Fish entered the river on 27-Apr and travelled up to 7.2 km where it spent most of the summer. It was detected up Nepopekum crk at one time on 16-Sept. It was recovered by floaters on 9-Oct and is suspected to have fallen prey to some predator. |
| 21 | 7 | 37 | 13-Aug-02 | 18:30 | | | 4.0 | Release |
| | | | 05-Sep-02 | 4:46 | 05-Sep-02 | 9:53 | 1.0 | Passes station 1 downstream |
| | | | | | 05-Sep-02 | 9:24 | 0.4 | Mobile |
| | | | 05-Sep-02 | 21:04 | 05-Sep-02 | 22:48 | 1.0 | Detected downstream station 1 |
| | | | 22-Sep-02 | 20:55 | 22-Sep-02 | 23:43 | 1.0 | Passes station 1 upstream |
| | | | | | 03-Oct-02 | 11:50 | 15.5 | Mobile Track |
| | | | | | 13-Oct-02 | 9:50 | 15.0 | Boat track |
| | | | | | 20-Oct-02 | 10:54 | 15.0 | Truck track |
| | | | 21-Oct-02 | 0:20 | 21-Oct-02 | 0:45 | 1.0 | Passes station 1 downstream KELT |
| | | | | | | | | Fate (end of field season 2002): After release, fish moved down to the lower river and headed up to spawn on the 22-Sep. It spawned around 15 km and kelted on the 21-Oct. This was the last time it was detected so it must have moved into the lake on the US side. |

Table 5. Summary of detections and migratory behaviour for each radio-tagged char released in the BC Skagit River in 2001, 2002, and 2003.

| Fish No. | Chan | Code | First detected | | Last detected | | Loc (rkm) | Comments / Fate |
|---|------|------|----------------|-------|---------------|-------|-----------|--|
| | | | Date | Time | Date | Time | | |
| Fate (end of field season 2003): Fish was not detected during the 2003 field season. | | | | | | | | |
| 22 | 7 | 36 | 14-Aug-02 | 11:33 | | | 8.8 | Release |
| | | | | | 25-Sep-02 | 10:06 | 9.0 | Mobile Track |
| | | | 13-Oct-02 | 6:27 | 13-Oct-02 | 6:36 | 1.0 | Passes station 1 downstream KELT |
| Fate (end of field season 2002): This fish moved upstream after tagging and spawned somewhere upstream of 9 km. It kelted on the 13-Oct and that was the last time it was detected. It must have moved into the lake on the US side. | | | | | | | | |
| | | | | | 16-Sep-03 | 15:30 | -0.4 | Boat track (hanging at river mouth) |
| | | | | | 06-Oct-03 | 12:17 | 0.0 | Eric boat track |
| | | | 13-Oct-03 | 6:05 | 13-Oct-03 | 8:50 | 1.0 | Passes station 1 upstream |
| | | | | | 15-Oct-03 | 15:25 | 9.0 | Truck track at Highbank |
| | | | | | 20-Oct-03 | 10:21 | 10.5 | truck track |
| | | | 29-Oct-03 | 5:15 | 29-Oct-03 | 5:33 | 1.0 | Passed station 1 downstream KELT |
| Fate (end of field season 2003): Fish moved into the river on 13-Oct and kelted on 29-Oct. It spawned around 10.5 km during the week of 26-Oct. This fish spawned around this location in 2002 as well. | | | | | | | | |
| 23 | 5 | 53 | 14-Aug-02 | 11:47 | | | 8.8 | Release |
| | | | | | 05-Sep-02 | 8:51 | 9.0 | Mobile |
| | | | | | 10-Sep-02 | 14:20 | 8.7 | Mobile track by truck |
| | | | | | 14-Sep-02 | 11:20 | 8.7 | Mobile |
| | | | 18-Sep-02 | 3:41 | 18-Sep-02 | 5:55 | 18.1 | Passes station 8 upstream |
| | | | 08-Oct-02 | 19:42 | 08-Oct-02 | 20:04 | 18.1 | Passes station 8 downstream |
| | | | 09-Oct-02 | 19:50 | 09-Oct-02 | 20:09 | 1.0 | Passes station 1 downstream KELT |
| | | | | | 18-Oct-02 | 14:30 | 0.0 | Boat track by Eric |
| | | | | | 25-Oct-02 | 14:30 | -0.5 | Eric boat track |
| | | | | | 30-Oct-02 | 14:30 | -0.5 | Eric boat track |
| | | | | | 13-Nov-02 | 11:16 | -0.5 | Eric boat track |
| | | | 19-Nov-02 | 2:03 | 19-Nov-02 | 2:06 | 1.0 | Detected downstream station 1 |
| | | | | | 22-Nov-02 | 14:16 | | North stumpfields east side by Eric |
| | | | | | 18-Dec-03 | 11:48 | | Silver Crk Basin by Eric |
| Fate (end of field season 2002): After release, this fish moved upstream to spawn above 18 km. It kelted on the 9-Oct and held in the lower river until 18-Dec when it was detected on the US side at Silver Crk Basin. | | | | | | | | |
| | | | | | 16-Jan-03 | 10:48 | | Silver Crk Basin by Eric |
| | | | | | 01-Mar-03 | 13:21 | -2 km | Mobile track by truck |
| | | | | | 10-Apr-03 | 14:40 | -2.5 | Mobile track |
| | | | | | 23-May-03 | 10:07 | -3.0 | Truck Track |
| | | | | | 06-Oct-03 | 12:14 | 0.0 | Eric boat track |
| | | | | | 09-Oct-03 | 16:00 | -1.0 | Truck Track (mouth) |
| | | | | | 15-Oct-03 | 14:51 | -1.0 | Truck track (mouth) |
| | | | | | 20-Oct-03 | 11:10 | -1.0 | Truck Track (mouth) |
| Fate (end of field season 2003): Fish fish was first detected at the river mouth on 1-Mar. It was last detected on 20-Oct at the river mouth but did not enter the river to spawn during 2003. | | | | | | | | |
| 24 | 5 | 22 | 19-Aug-02 | 9:22 | | | 17.4 | Release |
| | | | | | 05-Sep-02 | 8:08 | 16.5 | Mobile |
| | | | 11-Sep-02 | 21:56 | 11-Sep-02 | 22:48 | 18.1 | Passes station 8 upstream |
| Fate (end of field season 2002): After release, this fish dropped back slightly and then moved up past 18 km to spawn. It had not kelted by the time we took the stations out on the 28-Nov. | | | | | | | | |
| | | | | | 11-Apr-03 | 11:13 | 25.2 | Detected in small Log jam pool. Fish probably dead and tag just left. We will confirm on later tracks. |
| | | | | | 20-Jun-03 | 11:07 | 25.2 | Confirmed dead. |
| 25 | 7 | 43 | 19-Aug-02 | 10:10 | | | 17.4 | Release |
| | | | | | 25-Aug-02 | | 17.1 | Reported dead on beach by angler and moved up on beach by angler |

Table 5. Summary of detections and migratory behaviour for each radio-tagged char released in the BC Skagit River in 2001, 2002, and 2003.

| Fish No. | Chan | Code | First detected | | Last detected | | Loc (rkm) | Comments / Fate |
|----------|------|------|----------------|-------|---------------|-------|----------------------------|---|
| | | | Date | Time | Date | Time | | |
| | | | | | 27-Aug-02 | 17:00 | 17.1 | <p>Tag recovered by Jack Mussell. Wound on anterior end at body cavity. Fish died a while ago and is partially decomposed. Fungus on side where antenna comes out and behind the gills. Ribs are separated from flesh at incision. Stomach is choked and swollen with contents. Tag lodged near rear of stomach cavity. Possibly pulled on by angler. Fish confirmed female. Photos roll 3 -3,4,5</p> <p>Fate (end of field season 2002): Fish dropped back slightly after release and was found dead by an angler on the 25-Aug. See comments above on the 27-Aug.</p> |
| 26 | 5 | 24 | 19-Aug-02 | 12:30 | | | 16.6 | Release |
| | | | 21-Aug-02 | 3:34 | 23-Aug-02 | 0:44 | 1.0 | Passes station 1 downstream |
| | | | | | | | | <p>Fate (end of field season 2002): Fish dropped back downstream into lake after being tagged. It was not detected again in the Skagit River.</p> |
| | | | | | 29-Jul-03 | 9:32 | Mouth of Little Beaver Crk | Eric Boat Track |
| | | | | | | | | <p>Fate (end of field season 2003): Fish was detected at the mouth of Little Beaver Crk on 29-Jul but did not enter the Skagit River during 2003. I feel that this fish spawns in another trib of Ross Lake.</p> |
| 27 | 7 | 40 | 19-Aug-02 | 13:09 | | | 16.6 | Release |
| | | | 13-Sep-02 | 0:52 | 13-Sep-02 | 22:28 | 1.0 | Passes station 1 downstream |
| | | | | | 12-Oct-02 | 15:08 | 0.0 | Boat track and visual by floater (Yellow Floy) |
| | | | 19-Oct-02 | 22:59 | 20-Oct-02 | 11:08 | 1.0 | Detected downstream station 1 |
| | | | 20-Oct-02 | 11:22 | 20-Oct-02 | 22:07 | 1.0 | Passes station 1 upstream |
| | | | 09-Nov-02 | 1:16 | 12-Nov-02 | 22:46 | 18.1 | Detected downstream station 8 |
| | | | 15-Nov-02 | 22:59 | 15-Nov-02 | 23:15 | 1.0 | Passes station 1 downstream KELT |
| | | | | | | | | <p>Fate (end of field season 2002): This fish was first floy tagged on the US side and then radio tagged on the Canadian side 16.6 km up the Skagit River. It then dropped back down and held in the lower river until 20-Oct when it moved upstream to the upper river to spawn above 18 km. It kelted on the 15-Nov and travelled back out into the lake on the US side.</p> |
| | | | 26-Oct-03 | 10:24 | 27-Oct-03 | 2:41 | 1.0 | Detected downstream station 1 |
| | | | | | | | | <p>Fate (end of field season 2003): This fish was detected downstream of station 1 on 27-Oct but it did not enter the river to spawn during 2003.</p> |
| 28 | 5 | 21 | 19-Aug-02 | 13:30 | | | 16.6 | Release |
| | | | 07-Sep-02 | 3:17 | 09-Sep-02 | 22:48 | 1.0 | Passes station 1 downstream |
| | | | | | 10-Sep-02 | 22:48 | 0.1 | Mobile track by boat |
| | | | 12-Sep-02 | 0:47 | 12-Sep-02 | 21:54 | 1.0 | Detected downstream station 1 |
| | | | | | 25-Sep-02 | 6:54 | 0.0 | Mobile Track |
| | | | 27-Sep-02 | 13:30 | 30-Sep-02 | 19:30 | 1.0 | Detected downstream station 1 |
| | | | | | 03-Oct-02 | 11:11 | 0.5 | Mobile Track |
| | | | 07-Oct-02 | 0:21 | 08-Oct-02 | 22:39 | 1.0 | Detected downstream station 1 |
| | | | | | 12-Oct-02 | 15:00 | 0.3 | Boat track |
| | | | 13-Oct-02 | 22:12 | 13-Oct-02 | 22:57 | 1.0 | Detected downstream station 1 |
| | | | 21-Oct-02 | 23:53 | 23-Oct-02 | 23:21 | 1.0 | Detected downstream station 1 |
| | | | | | 30-Oct-02 | 16:00 | 0.5 | Mobile track |
| | | | | | 30-Oct-02 | 14:30 | 0.5 | Eric mobile track |
| | | | 11-Nov-02 | 11:19 | 11-Nov-02 | 11:22 | 1.0 | Detected downstream station 1 |
| | | | | | 13-Nov-02 | 11:59 | 0.5 | Eric mobile track |
| | | | 18-Nov-02 | 2:32 | 23-Nov-02 | 22:17 | 1.0 | Detected downstream station 1(Moving up and downstream) |
| | | | | | | | | <p>Fate (end of field season 2002): Fish dropped back downstream after being tagged at 16.6 km. It then held in the lower river and travelled around quite a bit but stayed within a 1 km stretch of the river.</p> |
| | | | 16-Mar-03 | 0:15 | 16-Mar-03 | 12:03 | 1.0 | Passed station 1 upstream |
| | | | | | 21-Jul-03 | 9:52 | 17.0 | Boat track (seen by floaters) |
| | | | 24-Jul-03 | 1:47 | 12-Aug-03 | 5:17 | 1.0 | Passed station 1 downstream |
| | | | 12-Aug-03 | 20:57 | 13-Aug-03 | 23:03 | 1.0 | Detected downstream station 1 |
| | | | | | 09-Oct-03 | 15:13 | 0.3 | Boat track (visual by floaters) |
| | | | 16-Oct-03 | 23:04 | 18-Oct-03 | 10:24 | 1.0 | Passed station 1 upstream |
| | | | | | 20-Oct-03 | 10:14 | 15.2 | Truck track |
| | | | 23-Oct-03 | 7:25 | 24-Oct-03 | 7:00 | 18.0 | Detected downstream station 8 |
| | | | 24-Oct-03 | 20:19 | 24-Oct-03 | 20:57 | 18.0 | Detected downstream station 8 |
| | | | 29-Oct-03 | 2:28 | 29-Oct-03 | 22:39 | 18.0 | Detected downstream station 8 |

Table 5. Summary of detections and migratory behaviour for each radio-tagged char released in the BC Skagit River in 2001, 2002, and 2003.

| Fish No. | Chan | Code | First detected | | Last detected | | Loc (rkm) | Comments / Fate |
|--|------|------|----------------|-------|---------------|-------|-----------|--|
| | | | Date | Time | Date | Time | | |
| | | | 30-Oct-03 | 19:57 | 31-Oct-03 | 0:42 | 18.0 | Detected downstream station 8 |
| | | | | | 04-Nov-03 | 9:11 | 17.0 | Raft track |
| | | | 15-Nov-03 | 23:01 | 15-Nov-03 | 23:25 | 18.0 | Detected downstream station 8 |
| | | | 18-Nov-03 | 1:46 | 18-Nov-03 | 2:51 | 18.0 | Detected downstream station 8 |
| | | | 26-Nov-03 | 0:26 | 26-Nov-03 | 0:30 | 1.0 | Passed station 1 downstream KELT |
| <p>Fate (end of field season 2003): Fish moved into river on 16-Mar and then dropped back out of system on 12-Aug to return again on 18-Oct. It kelted on 16-Nov and spawned during the week of 23-Nov downstream of 18 km. This fish was caught and tagged at 16.6 km during the 2002 field season.</p> | | | | | | | | |
| 29 | 7 | 41 | 19-Aug-02 | 13:51 | | | 16.6 | Release |
| | | | 12-Sep-02 | 12:09 | 14-Sep-02 | 4:14 | 1.0 | Passes station 1 downstream |
| | | | | | 14-Sep-02 | 8:38 | 0.1 | Boat track |
| | | | | | 25-Sep-02 | 6:54 | 0.0 | Mobile Track |
| | | | 25-Sep-02 | 23:59 | 02-Oct-02 | 22:44 | 1.0 | Detected downstream station 1 |
| | | | | | 03-Oct-02 | 11:00 | 0.0 | Mobile Track |
| | | | 05-Oct-02 | 7:09 | 07-Oct-02 | 19:39 | 1.0 | Detected downstream station 1 |
| | | | | | 12-Oct-02 | 15:05 | 0.0 | Boat track |
| | | | | | 25-Oct-02 | 14:30 | -1.0 | Eric boat track |
| | | | | | 30-Oct-02 | 14:30 | -1.0 | Eric boat track |
| | | | | | 13-Nov-02 | 11:13 | -1.0 | Eric boat track |
| | | | | | 22-Nov-02 | 14:06 | | North stumpfields west side by Eric |
| | | | | | 18-Dec-03 | 11:50 | | Silver Crk Basin by Eric |
| <p>Fate (end of field season 2002): This fish dropped back downstream after being tagged and held in the lower river until 18-Dec when it was detected at the Silver Crk Basin on the US side.</p> | | | | | | | | |
| | | | | | 16-Jan-03 | 10:35 | | Hozomeen boat Launch by Eric |
| | | | 26-Mar-03 | 2:03 | 29-Mar-03 | 8:44 | 1.0 | Detected downstream station 1 |
| | | | | | 29-Mar-03 | 9:30 | 0.8 | Mobile Track (Seen by floaters) |
| | | | 29-Mar-03 | 8:58 | 31-Mar-03 | 15:44 | 1.0 | Detected passing station 1 upstream |
| | | | 06-Jul-03 | 23:16 | 07-Jul-03 | 1:38 | 18.0 | Passed upstream station 8 |
| | | | 09-Jul-03 | 2:36 | 09-Jul-03 | 4:16 | 18.0 | Passed downstream station 8 |
| | | | 11-Jul-03 | 0:57 | 11-Jul-03 | 1:41 | 18.0 | Detected downstream station 8 |
| | | | 18-Jul-03 | 2:08 | 18-Jul-03 | 4:32 | 18.0 | Detected downstream station 8 |
| | | | 20-Jul-03 | 0:02 | 20-Jul-03 | 23:59 | 18.0 | Passed station 8 upstream |
| | | | | | 22-Jul-03 | 15:35 | 21.3 | Boat track (seen by floaters) |
| | | | 27-Jul-03 | 2:24 | 27-Jul-03 | 22:35 | 32.5 | Passed station 9 upstream Sumallo |
| | | | 28-Jul-03 | 4:37 | 29-Jul-03 | 0:34 | 32.5 | Passed station 9 downstream |
| | | | 17-Aug-03 | 23:53 | 18-Aug-03 | 0:20 | 32.5 | Detected downstream station 9 |
| | | | 20-Aug-03 | 23:08 | 21-Aug-03 | 1:33 | 32.5 | Detected passing station 9 upstream Skagit |
| | | | 21-Aug-03 | 23:09 | 22-Aug-03 | 3:04 | 32.5 | Detected passing station 9 downstream |
| | | | 23-Aug-03 | 23:23 | 13-Sep-03 | 4:53 | 32.5 | Detected downstream station 9 |
| | | | | | 14-Sep-03 | 10:25 | 31.1 | Mobile track (visual) |
| | | | 26-Aug-03 | 3:35 | 01-Oct-03 | 20:11 | 32.5 | Detected downstream station 9 |
| | | | | | 24-Oct-03 | 7:55 | 31.6 | Mobile track |
| | | | 14-Nov-03 | 12:35 | 01-Dec-03 | 0:01 | 32.5 | Detected downstream station 9 |
| <p>Fate (end of field season 2003): Fish entered river on 31-Mar and and was last detected on 1-Dec downstream 32.5. Fish had not kelted by the time the stations were removed on 2-Dec. Fish moved around a lot at the mouth of the Sumallo and ventured up both the Skagit and Sumallo above station 9. Fish probably spawned around 31.6 km.</p> | | | | | | | | |
| 30 | 5 | 59 | 19-Aug-02 | 14:04 | | | 16.6 | Release |
| | | | | | 03-Oct-02 | 11:52 | 15.4 | Mobile Track |
| | | | 11-Oct-02 | 21:12 | 11-Oct-02 | 21:20 | 1.0 | Passed station 1 downstream KELT |
| | | | | | 25-Oct-02 | 14:30 | -1.0 | Eric boat track |
| | | | | | 13-Nov-02 | 10:08 | | Little Beaver Crk Basin |
| | | | | | 22-Nov-02 | 13:40 | | Little Beaver Crk Basin |
| | | | | | 18-Dec-03 | 11:44 | | Hozomeen Boat Launch |
| <p>Fate (end of field season 2002): This fish spawned around 15.4 km and kelted on the 11-Oct. It held in the lower river for a while and then travelled to the Little Beaver Crk Basin on the US side on 13-Nov and then to the Hozomeen Boat Launch on the 18-Dec.</p> | | | | | | | | |
| | | | | | 16-Jan-03 | 10:47 | | Silver Crk Basin by Eric |
| | | | | | 19-Mar-03 | 12:46 | | Silver Crk Basin by Eric |
| | | | | | 15-Oct-03 | 14:51 | -1.0 | Truck track (mouth) |
| <p>Fate (end of field season 2003): Fish was detected at river mouth on 15-Oct but did not enter the river to spawn during the 2003 field season.</p> | | | | | | | | |

Table 5. Summary of detections and migratory behaviour for each radio-tagged char released in the BC Skagit River in 2001, 2002, and 2003.

| Fish No. | Chan | Code | First detected | | Last detected | | Loc (rkm) | Comments / Fate | | |
|-----------|-------|-----------|----------------|-------|---------------|---|---|-------------------------------------|---|---|
| | | | Date | Time | Date | Time | | | | |
| 31 | 7 | 39 | 19-Aug-02 | 14:46 | | | 16.6 | Release | | |
| | | | 22-Aug-02 | 1:34 | 26-Aug-02 | 14:29 | 1.0 | Passes station 1 downstream | | |
| | | | 05-Sep-02 | 4:50 | 05-Sep-02 | 10:06 | 1.0 | Passes station 1 upstream | | |
| | | | | | 05-Sep-02 | 9:19 | 1.7 | Mobile Track | | |
| | | | 05-Sep-02 | 10:54 | 09-Sep-02 | 5:08 | 1.0 | Passes station 1 downstream | | |
| | | | | | 10-Sep-02 | 9:20 | 0.0 | Mobile Track by boat | | |
| | | | 10-Sep-02 | 20:45 | 14-Sep-02 | 7:53 | 1.0 | Detected downstream station 1 | | |
| | | | | | 14-Sep-02 | 8:38 | 0.1 | Boat track | | |
| | | | | | 03-Oct-02 | 11:00 | 0.0 | Mobile Track | | |
| | | | | | 07-Oct-02 | 7:51 | 1.0 | First detected downstream station 1 | | |
| | | | | | 12-Oct-02 | 15:00 | 0.3 | Boat track | | |
| | | | 13-Oct-02 | 7:32 | 15-Oct-02 | 8:27 | 1.0 | Detected downstream station 1 | | |
| | | | | | | | | | | Fate (end of field season 2002): Fish dropped back downstream to the lower river after release and held there until the 15-Oct when it moved out into the lake on the US side. |
| | | | | | | | 31-Oct-03 | 13:30 | | Ruby Crk Basin by Eric |
| | | | 05-Apr-03 | 23:42 | 10-Apr-03 | 7:50 | | | | Detected downstream station 1 |
| | | | | | 10-Apr-03 | 10:30 | 0.6 | | | Mobile track (seen by floater) |
| | | | 10-Apr-03 | 8:21 | 11-Apr-03 | 20:01 | 1.0 | | | Passed station 1 upstream |
| | | | | | 21-Jul-03 | 10:25 | 15.5 | | | Boat track (seen by floaters) |
| | | | | | 24-Aug-03 | 8:29 | 16.0 | | | Truck track |
| | | | | | 16-Sep-03 | 10:42 | 0.0 | | | Eric boat track |
| | | | | | 16-Sep-03 | 15:30 | -0.4 | | | Boat track (passed station 1 undetected) |
| | | | | | 06-Oct-03 | 12:08 | 0.0 | | | Eric boat track |
| | | | | | 09-Oct-03 | 16:00 | -1.0 | | | Truck track (mouth) |
| | | 15-Oct-03 | 14:51 | -1.0 | | | Truck track (mouth) | | | |
| 19-Oct-03 | 10:20 | 19-Oct-03 | 13:42 | 1.0 | | | Passed station 1 upstream | | | |
| | | 24-Oct-03 | 12:40 | 11.0 | | | Mobile track | | | |
| | | 04-Nov-03 | 9:20 | 15.6 | | | Raft track | | | |
| 09-Nov-03 | 7:10 | 09-Nov-03 | 7:13 | 1.0 | | | Passed station 1 downstream KELT | | | |
| | | | | | | | Fate (end of field season 2003): Fish moved into river on 11-Apr to 15.5 km and then dropped back in early Sept to return again on on 19-Oct. It kelted on 9-Nov and spawned at 15.6 km during the week of 2-Nov. Fish was released from 16.6 km during the 2002 field season. | | | |
| 32 | 7 | 42 | 26-Aug-02 | 11:08 | | | 11.9 | Release | | |
| | | | | | 05-Sep-02 | 8:43 | 12.0 | Mobile Track | | |
| | | | 10-Oct-02 | 3:27 | 10-Oct-02 | 19:51 | 18.1 | Detected downstream station 8 | | |
| | | | 11-Oct-02 | 20:17 | 11-Oct-02 | 20:59 | 18.1 | Detected downstream station 8 | | |
| | | | | | 13-Oct-02 | 12:15 | 11.7 | Boat track | | |
| | | | | | | | | | Fate (end of field season 2002): This fish moved upstream after being tagged. It was still in the river system when the stations were removed on the 28-Nov. | |
| | | | | | 22-Mar-03 | 12:30 | 3.8 | | Tag detected in log jam but could not be found by floaters. Possibly buried in sand. | |
| | | | | | 21-Jul-03 | 12:15 | 11.5 | | Back from the dead. Boat track (seen by floaters) Must have been hiding in log jam on 22-Mar. (no pink spaghetti anymore) | |
| | | | | | 15-Sep-03 | 14:13 | 12.3 | | Boat track (visual by floaters) | |
| | | | | | 09-Oct-03 | 10:24 | 6.7 | | Boat track (visual by floaters) bright fish | |
| | | 04-Nov-03 | 10:22 | 7.5 | | Raft track | | | | |
| | | | | | | Fate (end of field season 2003): Fish detected in river on 21-Jul so probably was in the river when the stations were installed in Mar. Fish had not left the system by the time the stations were removed on 2-Dec but probably spawned around 7.5 km in early Nov. | | | | |
| 33 | 7 | 30 | 26-Aug-02 | 11:50 | | | 11.9 | Release | | |
| | | | 07-Sep-02 | 2:42 | 10-Sep-02 | 5:54 | 1.0 | Passes station 1 downstream | | |
| | | | | | 10-Sep-02 | 9:20 | 0.0 | Mobile track by boat | | |
| | | | 10-Sep-02 | 20:04 | 14-Sep-02 | 9:14 | 1.0 | Detected downstream station 1 | | |
| | | | | | 14-Sep-02 | 8:38 | 0.1 | Boat track | | |
| | | | 14-Sep-02 | 20:12 | 25-Sep-02 | 6:00 | 1.0 | Detected downstream station 1 | | |
| | | | | | 25-Sep-02 | 6:54 | 0.0 | Mobile track | | |
| | | | 25-Sep-02 | 19:45 | 03-Oct-02 | 7:49 | 1.0 | Detected downstream station 1 | | |
| | | | | | 03-Oct-02 | 11:12 | 0.5 | Mobile Track | | |
| | | | 03-Oct-02 | 19:36 | 12-Oct-02 | 7:01 | 1.0 | Detected downstream station 1 | | |
| | | | | | 12-Oct-02 | 15:00 | 0.3 | Boat track | | |
| | | | 12-Oct-02 | 19:38 | 17-Oct-02 | 0:43 | 1.0 | Detected downstream station 1 | | |
| | | | | | 18-Oct-02 | 14:30 | 0.0 | Boat track by Eric | | |
| | | | | | 25-Oct-02 | 14:30 | -1.0 | Eric mobile track | | |

Table 5. Summary of detections and migratory behaviour for each radio-tagged char released in the BC Skagit River in 2001, 2002, and 2003.

| Fish No. | Chan | Code | First detected | | Last detected | | Loc (rkm) | Comments / Fate |
|----------|------|------|----------------|-------|---------------|-------|-----------|--|
| | | | Date | Time | Date | Time | | |
| | | | | | 30-Oct-02 | 14:30 | -1.0 | Eric mobile track |
| | | | | | 13-Nov-02 | 11:32 | 0.0 | Eric mobile track |
| | | | | | 22-Nov-02 | 14:06 | | North stumpfields west side by Eric |
| | | | | | | | | Fate (end of field season 2002): This fish dropped back after being tagged and hung out in the lower river. On the 22-Nov it was detected on the US side off the river mouth. |
| | | | 05-Apr-03 | 0:34 | 10-Apr-03 | 7:50 | | Detected downstream station 1 |
| | | | | | 10-Apr-03 | 10:00 | 0.0 | Mobile track |
| | | | 10-Apr-03 | 8:15 | 17-Apr-03 | 7:36 | 1.0 | Detected downstream station 1 |
| | | | | | 17-Apr-03 | 9:32 | 0.8 | Boat track |
| | | | 17-Apr-03 | 13:43 | 19-Apr-03 | 23:11 | 1.0 | Passed station 1 upstream |
| | | | 03-Jul-03 | 18:19 | 04-Jul-03 | 7:30 | 18.0 | Detected downstream station 8 |
| | | | | | 21-Jul-03 | 12:03 | 11.6 | Possible sighting but tag not working. No antenna could be seen. |
| | | | | | | | | Fate (end of field season 2003): Fish moved into river on 19-Apr and was last detected downstream 18 km on 4-Jul. I think the tag may not be working as we had a possible sighting on 21-Jul at 11.6 km and it could have been one of two fish that had pink spaghetti tags but no working radio tag. |
| 34 | 5 | 19 | 26-Aug-02 | 15:20 | | | 9.0 | Release |
| | | | | | 05-Sep-02 | 8:53 | 9.2 | Mobile track |
| | | | 11-Sep-02 | 22:25 | 14-Sep-02 | 4:42 | 1.0 | Passes station 1 downstream KELT |
| | | | | | 14-Sep-02 | 8:38 | 1.0 | Boat track |
| | | | | | 03-Oct-02 | 14:20 | | Detected and recaptured at Mouth of Big Beaver Crk By Eric |
| | | | | | 08-Oct-02 | 10:00 | | Detected and recaptured at Mouth of Big Beaver Crk By Eric |
| | | | | | | | | Fate (end of field season 2002): Fish moved upstream after being tagged and spawned above 9 km. It kelted on the 14-Sep and moved out into the lake on the US side. It was detected on the 3 and 8-Oct at the Mouth of Big Beaver Crk. |
| | | | | | | | | Fate (end of field season 2003): Fish was not detected during the 2003 field season. |
| 35 | 5 | 15 | 26-Aug-02 | 15:20 | | | 9.0 | Release |
| | | | | | 05-Sep-02 | 8:52 | 8.7 | Mobile Track |
| | | | | | 10-Sep-02 | 14:20 | 8.7 | Mobile Track |
| | | | 21-Sep-02 | 3:18 | 21-Sep-02 | 4:37 | 18.1 | Passes station 8 upstream |
| | | | 23-Sep-02 | 2:29 | 23-Sep-02 | 2:47 | 18.1 | Passes station 8 downstream |
| | | | 24-Sep-02 | 21:57 | 24-Sep-02 | 23:33 | 18.1 | Passes station 8 upstream |
| | | | 12-Oct-02 | 4:01 | 12-Oct-02 | 4:16 | 18.1 | Passes station 8 downstream |
| | | | | | 13-Oct-02 | 12:40 | 10.9 | Boat track |
| | | | 15-Oct-02 | 21:36 | 15-Oct-02 | 21:41 | 1.0 | Passes station 1 downstream KELT |
| | | | | | 18-Oct-02 | 14:30 | 0.0 | Boat track by Eric |
| | | | | | 25-Oct-02 | 14:30 | -1.0 | Eric boat track |
| | | | | | 30-Oct-02 | 14:30 | -1.0 | Eric boat track |
| | | | | | 13-Nov-02 | 11:13 | -2.0 | Eric boat track near NPS Boat Launch |
| | | | 23-Nov-02 | 4:16 | 23-Nov-02 | 23:08 | 1.0 | Detected downstream station 1 |
| | | | | | | | | Fate (end of field season 2002): This fish moved up and spawned above 18 km. It kelted on the 15-Oct and held in the lower river. It was detected on both the Canadian and US side. |
| | | | | | 10-Apr-03 | 11:30 | 0.2 | Boat track |
| | | | 10-Apr-03 | 20:34 | 17-Apr-03 | 7:38 | 1.0 | Detected downstream station 1 |
| | | | | | 17-Apr-03 | 9:32 | 0.8 | Boat track |
| | | | 17-Apr-03 | 10:04 | 20-Apr-03 | 4:07 | 1.0 | Passes station 1 upstream |
| | | | | | 14-Jun-03 | 9:12 | 8.7 | Mobile Track |
| | | | | | 20-Jun-03 | 14:01 | 9.0 | Mobile Track |
| | | | | | 21-Jul-03 | 13:38 | 8.8 | Boat track (seen by floaters) |
| | | | | | 12-Aug-03 | 12:03 | 9.0 | Truck track |
| | | | 02-Sep-03 | 22:44 | 02-Sep-03 | 22:46 | 1.0 | Detected passing station 1 downstream |
| | | | | | 26-Sep-03 | 16:48 | 18.0 | One hit on station 8? |
| | | | | | 07-Nov-03 | 7:34 | 1.0 | One hit on station 1? |
| | | | | | | | | Fate (end of field season 2003): Fish moved into river on 20-Apr and held around 9 km until 2-Sept when it passed station 1 downstream. I feel that the tag might not have been working all that well and so we only got one hit on 26-Sept when it passed station 8 upstream and again on 7-Nov when it kelted. I feel that this fish spawned below 18 km. It probably spawned during the week of 2-Nov and kelted on 7-Nov. |
| 36 | 7 | 34 | 27-Aug-02 | 9:51 | | | 5.5 | Release |
| | | | 29-Aug-02 | 22:30 | 05-Sep-02 | 5:52 | 1.0 | Passes station 1 downstream |
| | | | | | 05-Sep-02 | 9:30 | 0.0 | Mobile Track |
| | | | 05-Sep-02 | 22:02 | 10-Sep-02 | 5:52 | 1.0 | Detected downstream station 1 |

Table 5. Summary of detections and migratory behaviour for each radio-tagged char released in the BC Skagit River in 2001, 2002, and 2003.

| Fish No. | Chan | Code | First detected | | Last detected | | Loc (rkm) | Comments / Fate |
|----------|------|------|----------------|-------|---------------|-------|-----------|---|
| | | | Date | Time | Date | Time | | |
| | | | 10-Sep-02 | 19:45 | 10-Sep-02 | 9:20 | 0.0 | Boat track |
| | | | | | 12-Sep-02 | 6:20 | 1.0 | Detected downstream station 1 |
| | | | | | 14-Sep-02 | 9:40 | -0.1 | Boat track |
| | | | 17-Sep-02 | 18:51 | 17-Sep-02 | 19:14 | 1.0 | Detected downstream station 1 |
| | | | | | 18-Oct-02 | 14:30 | 0.0 | Boat track by Eric |
| | | | | | 18-Oct-02 | ? | 0.0 | Tag recovered from dead and decomposed fish at US boundary by Greg Dixon, Seattle City Light. |
| | | | 23-Oct-02 | 8:21 | 29-Oct-02 | 14:24 | 1.0 | Detected at station 1 (tag in Seattle City Light vehicle) |
| | | | 22-Oct-02 | 16:28 | 29-Oct-02 | 14:49 | 18.1 | Detected at station 8 (tag in Seattle City Light vehicle) |
| | | | 13-Nov-02 | 11:25 | 13-Nov-02 | 16:00 | 18.1 | Detected at station 8 (tag in Seattle City Light vehicle) |
| | | | 13-Nov-02 | 11:39 | 13-Nov-02 | 15:28 | 1.0 | Detected at station 1 (tag in Seattle City Light vehicle) |
| | | | | | 13-Nov-02 | 12:10 | 0.0 | Boat track by Eric |
| | | | | | | | | Fate (end of field season 2002): This fish dropped back after being tagged to the lower river. It was recovered dead on the 18-Oct at 0 km. Fish probably died as a result of angling because it was still alive on the 17-Sep (20 days after being radio tagged) |
| 37 | 7 | 33 | 27-Aug-02 | 9:56 | | | 5.5 | Release |
| | | | | | 25-Sep-02 | 14:43 | 15.3 | Boat track and visual |
| | | | | | 03-Oct-02 | 11:50 | 15.1 | Mobile Track |
| | | | 12-Oct-02 | 5:45 | 12-Oct-02 | 5:54 | 1.0 | Passes station 1 downstream KELT |
| | | | | | 09-Oct-03 | 16:00 | -1.0 | Truck track (mouth) |
| | | | | | 15-Oct-03 | 14:51 | -1.0 | Truck track (mouth) |
| | | | 25-Oct-03 | 0:14 | 28-Oct-03 | 15:42 | 1.0 | Detected downstream station 1 |
| | | | | | | | | Fate (end of field season 2003): Fish was first detected at mouth on 9-Oct and last detected on 28-Oct downstream of station 1. It did not enter the river to spawn during 2003. |
| 38 | 5 | 55 | 10-Sep-02 | 10:23 | | | 0.1 | Release |
| | | | 10-Sep-02 | 10:16 | 10-Sep-02 | 13:10 | 1.0 | Detected downstream station 1 |
| | | | 10-Sep-02 | 14:17 | 14-Sep-02 | 10:30 | 1.0 | Detected downstream station 1 |
| | | | | | 14-Sep-02 | 8:00 | 0.7 | Boat track and visual by floater |
| | | | 14-Sep-02 | 20:43 | 18-Sep-02 | 0:02 | 1.0 | Passed station 1 upstream |
| | | | | | 25-Sep-02 | 10:06 | 8.5 | Mobile track |
| | | | 10-Oct-02 | 23:38 | 10-Oct-02 | 23:59 | 1.0 | Passed station 1 downstream KELT |
| | | | | | | | | Fate (end of field season 2002): This fish held in the lower river after being tagged and then moved up to around 8.5 km to spawn. It kelted on the 10-Oct and moved out into the lake on the US side. |
| | | | | | 16-Jan-03 | 10:35 | | Hozomeen Boat Launch by Eric |
| | | | | | 06-Oct-03 | 12:09 | 0.0 | Eric boat track |
| | | | | | 15-Oct-03 | 14:51 | -1.0 | Truck track (mouth) |
| | | | | | | | | Fate (end of field season 2003): This fish was detected at the river mouth on 15-Oct but did not enter the river to spawn during 2003. |
| 39 | 5 | 54 | 10-Sep-02 | 11:05 | | | 0.1 | Release |
| | | | 10-Sep-02 | 11:30 | 10-Sep-02 | 14:00 | 1.0 | Detected downstream station 1 |
| | | | 10-Sep-02 | 14:16 | 10-Sep-02 | 20:36 | 1.0 | Detected downstream station 1 |
| | | | 16-Sep-02 | 1:35 | 19-Sep-02 | 21:57 | 1.0 | Passed station 1 upstream |
| | | | | | 03-Oct-02 | 11:55 | 15.1 | Mobile Track |
| | | | 08-Oct-02 | 23:50 | 09-Oct-02 | 1:11 | 18.1 | Passed station 8 upstream |
| | | | 12-Oct-02 | 2:28 | 12-Oct-02 | 3:24 | 18.1 | Passed station 8 downstream |
| | | | | | 13-Oct-02 | 12:50 | 10.6 | Boat track |
| | | | 06-Nov-02 | 5:28 | 06-Nov-02 | 5:31 | 1.0 | Passed station 1 downstream KELT |
| | | | | | 13-Nov-02 | 13:10 | | Big Beaver Crk Mouth by Eric |
| | | | | | 22-Nov-02 | 12:35 | | Big Beaver Crk Mouth by Eric |
| | | | | | | | | Fate (end of field season 2002): This fish moved upstream and then dropped back downstream to possibly spawn around 10.6 km. It kelted on the 6-Nov and moved out in the lake on the US side and was detected on the 13 and 22-Nov at the Mouth of Big Beaver Crk. |
| | | | | | | | | Fate (end of field season 2003): Fish was not detected during the 2003 field season. |
| 40 | 7 | 43 | 10-Sep-02 | 11:11 | | | 0.1 | Release |
| | | | 10-Sep-02 | 20:05 | 14-Sep-02 | 6:02 | 1.0 | Detected downstream station 1 |
| | | | | | 14-Sep-02 | 8:38 | 0.1 | Boat track |
| | | | | | 14-Sep-02 | 8:45 | 0.1 | Recapture by Jim Rissling. Fish in good shape. |

Table 5. Summary of detections and migratory behaviour for each radio-tagged char released in the BC Skagit River in 2001, 2002, and 2003.

| Fish No. | Chan | Code | First detected | | Last detected | | Loc (rkm) | Comments / Fate |
|----------|------|-----------|----------------|-----------|---------------|-------|-----------|---|
| | | | Date | Time | Date | Time | | |
| | | | | | 25-Sep-02 | 6:54 | 0.0 | Mobile Track |
| | | | | | 03-Oct-02 | 11:00 | 0.0 | Mobile Track |
| | | | | | 25-Oct-02 | 14:30 | -1.5 | Eric boat track |
| | | | | | 30-Oct-02 | 14:30 | -1.5 | Eric boat track |
| | | | | | 13-Nov-02 | 11:13 | -1.5 | Eric boat track |
| | | | | | 22-Nov-02 | 14:07 | | North stumplefields east side by Eric |
| | | | | | | | | Fate (end of field season 2002): Fish held in the lower river after release and was recaptured once on the 14-Sep. On the 22-Nov it was detected on the US side off of the river mouth. |
| | | | | | 16-Jan-03 | 10:35 | | Hozomeen Boat Launch by Eric |
| | | | | | 19-Mar-03 | 13:08 | | North Jack Point by Eric |
| | | | | | 10-Apr-03 | 14:52 | -5.0 | Mobile track (at river mouth) |
| | | 10-May-03 | 21:19 | 23-May-03 | 5:28 | 1.0 | 1.0 | Detected downstream station 1 |
| | | 12-Aug-03 | 21:33 | 24-Aug-03 | 1:56 | 1.0 | 1.0 | Detected downstream station 1 |
| | | | | 16-Sep-03 | 15:08 | 0.3 | 0.3 | Boat track (visual by floaters) |
| | | 16-Sep-03 | 20:29 | 28-Sep-03 | 2:37 | 1.0 | 1.0 | Detected downstream station 1 |
| | | | | 06-Oct-03 | 12:16 | 0.0 | 0.0 | Eric boat track |
| | | | | 09-Oct-03 | 16:00 | -1.0 | -1.0 | Truck track (mouth) |
| | | | | 15-Oct-03 | 14:51 | -1.0 | -1.0 | Truck track (mouth) |
| | | | | 20-Oct-03 | 11:01 | -0.3 | -0.3 | Truck track (mouth) |
| | | 23-Oct-03 | 11:48 | 24-Oct-03 | 12:53 | 1.0 | 1.0 | Detected downstream station 1 |
| | | 24-Oct-03 | 13:06 | 30-Oct-03 | 12:53 | 1.0 | 1.0 | Detected downstream station 1 |
| | | 30-Oct-03 | 13:25 | 04-Nov-03 | 8:47 | 1.0 | 1.0 | Detected downstream station 1 |
| | | | | 04-Nov-03 | 11:45 | 0.8 | 0.8 | Raft track |
| | | 04-Nov-03 | 9:56 | 13-Nov-03 | 9:15 | 1.0 | 1.0 | Detected downstream station 1 |
| | | | | 13-Nov-03 | 8:20 | 0.5 | 0.5 | Mobile track |
| | | 13-Nov-03 | 9:34 | 30-Nov-03 | 20:53 | 1.0 | 1.0 | Detected downstream station 1 |
| | | | | | | | | Fate (end of field season 2003): Fish was first detected at river mouth on 10-Apr and last detected at mouth on 30-Nov. It did not travel up the river in 2003. It looks as though this fish did not spawn the last two years. |
| 41 | 7 | 32 | 10-Sep-02 | 11:44 | | | 0.1 | Release |
| | | | 11-Sep-02 | 1:34 | 14-Sep-02 | 10:22 | 1.0 | Detected downstream station 1 |
| | | | | | 14-Sep-02 | 8:38 | 0.1 | Boat track |
| | | | 14-Sep-02 | 22:38 | 15-Sep-02 | 20:54 | 1.0 | Passed station 1 upstream |
| | | | | | 03-Oct-02 | 11:50 | 15.0 | Mobile Track |
| | | | | | 13-Oct-02 | 8:40 | 16.9 | Boat track |
| | | | 13-Oct-02 | 21:00 | 14-Oct-02 | 22:18 | 18.1 | Detected downstream station 8 |
| | | | | | 20-Oct-02 | 10:52 | 15.3 | Truck track |
| | | | 21-Oct-02 | 0:22 | 25-Oct-02 | 21:53 | 1.0 | Passed station 1 downstream KELT |
| | | | | | | | | Fate (end of field season 2002): This fish moved upstream to spawn around 15 km. It kelted on the 25-Oct and moved out into the lake on the US side. |
| | | | | | | | | Fate (end of field season 2003): Fish was not detected in 2003. |
| 42 | 7 | 31 | 10-Sep-02 | 11:56 | | | 0.1 | Release |
| | | | 10-Sep-02 | 20:29 | 13-Sep-02 | 1:09 | 1.0 | Detected downstream station 1 |
| | | | | | 03-Oct-02 | 11:00 | 0.0 | Mobile Track |
| | | | | | | | | Detected at mouth of Big Beaver Crk by Eric. Just arrived today because it wasn't there on the 17-Oct. |
| | | | | | 18-Oct-02 | 10:13 | | |
| | | | | | 30-Oct-02 | 14:30 | -1.0 | Eric boat track |
| | | | | | 13-Nov-02 | 10:29 | -1.0 | Eric boat track |
| | | | | | 18-Dec-03 | 11:49 | | Silver Crk Basin by Eric |
| | | | | | | | | Fate (end of field season 2002): This fish held in the lower river after release and then moved to the US side and was detected at the mouth of Big Beaver Crk on the 18-Oct. It then moved back to the lower Skagit on the 30-Oct and then to the Silver Crk Basin on the 18-Dec. |
| | | | | | 16-Jan-03 | 10:48 | | Silver Crk Basin by Eric |
| | | | | | 19-Mar-03 | 12:46 | | Silver Crk Basin by Eric |
| | | | | | 10-Apr-03 | 14:52 | -5.0 | Mobile track (at river mouth) |
| | | 25-Apr-03 | 1:13 | 25-Apr-03 | 2:31 | 1.0 | 1.0 | Passes station 1 upstream |
| | | 08-Oct-03 | 20:43 | 08-Oct-03 | 20:57 | 1.0 | 1.0 | Passed station 1 downstream (spawned in trib?)KELT |
| | | | | 15-Oct-03 | 14:51 | -1.0 | -1.0 | Truck track (mouth) |
| | | | | 20-Oct-03 | 11:10 | -1.0 | -1.0 | Truck track (mouth) |
| | | | | | | | | Fate (end of field season 2003): Fish was first detected at river mouth on 10-Apr and moved up into the river on 25-Apr. and kelted on 8-Oct. It is suspected that this fish spawned in the Maiso Panik trib in the week of 5-Oct. |

Table 5. Summary of detections and migratory behaviour for each radio-tagged char released in the BC Skagit River in 2001, 2002, and 2003.

| Fish No. | Chan | Code | First detected | | Last detected | | Loc (rkm) | Comments / Fate |
|-----------|-------|-----------|----------------|-------|---|-------|-----------|--|
| | | | Date | Time | Date | Time | | |
| 43 | 5 | 13 | 10-Sep-02 | 13:24 | | | 0.1 | Release |
| | | | 28-Sep-02 | 21:19 | 29-Sep-02 | 0:21 | 1.0 | Passed station 1 upstream |
| | | | | | 12-Oct-02 | 10:13 | 6.8 | Boat track |
| | | | 30-Oct-02 | 0:16 | 30-Oct-02 | 1:12 | 18.1 | Detected downstream station 8 |
| | | | 05-Nov-02 | 1:00 | 05-Nov-02 | 1:12 | 1.0 | Passed station 1 downstream KELTS |
| | | | | | | | | Fate (end of field season 2002): This fish moved upstream after being tagged and spawned below 18 km. It kelted on the 5-Nov and moved out into the lake on the US side. |
| | | | | | 19-Mar-03 | 13:27 | | No Name Crk Basin by Eric |
| | | | | | 10-Apr-03 | 14:52 | -5.0 | Mobile track (at river mouth) |
| | | | | | | | | Fate (end of field season 2003): Fish was detected at river mouth on 10-Apr and was not seen since. |
| | | | | | | | | |
| 44 | 5 | 58 | 14-Sep-02 | 14:43 | | | 16.7 | Release |
| | | | | | 14-Sep-02 | 15:41 | 16.5 | Boat track |
| | | | | | 25-Sep-02 | 14:11 | 16.1 | Boat track |
| | | | | | 03-Oct-02 | 12:06 | 15.7 | Mobile Track |
| | | | 06-Oct-02 | 22:03 | 07-Oct-02 | 0:24 | 18.1 | Passed station 8 upstream |
| | | | | | | | | Fate (end of field season 2002): This fish held around 16 km after release and then moved up to spawn above 18 km on the 7-Oct. It still had not kelted by the 28-Nov when the stations were removed. |
| | | | | | 10-Apr-03 | 13:45 | 20.5 | Detected from trail which was quite a distance from river. We will look for tag on a later float count. |
| | | | | | 01-May-03 | 13:30 | 20.0 | Tag was detected at campsite 39 at bottom of river and could not be recovered. Possibly killed by angler and tag thrown back in river. |
| | | | 30-May-03 | 6:19 | 31-May-03 | 3:18 | 18.0 | Passed station 8 downstream (frescet moving tag?) |
| | | | | | 21-Jul-03 | 10:46 | 14.6 | Boat track (tag moved d/s in frescet) |
| | | 08-Oct-03 | 11:57 | 14.3 | Found tag on river bottom minus antenna) | | | |
| 45 | 5 | 20 | 14-Sep-02 | 14:53 | | | 16.7 | Release |
| | | | | | 14-Sep-02 | 15:41 | 16.5 | Boat track |
| | | | | | 25-Sep-02 | 10:06 | 8.5 | Mobile track |
| | | | | | 03-Oct-02 | 11:20 | 8.7 | Mobile track |
| | | | | | 12-Oct-02 | 9:00 | 8.8 | Boat track |
| | | | | | 13-Oct-02 | 14:00 | 8.8 | Boat track (Not seen by floaters, keep an eye on this fish) |
| | | | | | 20-Oct-02 | 11:03 | 8.8 | Truck track |
| | | | | | 30-Oct-02 | 15:26 | 8.8 | Truck track (This tag may be on the beach somewhere) |
| | | | | | 17-Nov-02 | 11:30 | 8.8 | Tag found in bushes above river. Located at a heavily fished area. Tag had to be thrown there by an angler or dragged there by a predator. |
| | | | | | | | | Fate (end of field season 2002): This fish dropped back to 8.8 km after holding around 16 km. The tag was found in the bushes on the 17-Nov but I think that it died around the 12-Oct. See comment above on the 17-Nov. |
| 46 | 5 | 14 | 14-Sep-02 | 15:11 | | | 16.7 | Release |
| | | | | | 14-Sep-02 | 15:41 | 16.5 | Boat track |
| | | | | | 25-Sep-02 | 14:30 | 15.5 | Boat track and visual by floater |
| | | | | | 03-Oct-02 | 11:50 | 15.4 | Mobile Track |
| | | | | | 13-Oct-02 | 10:45 | 13.5 | Boat track |
| | | | | | 20-Oct-02 | 10:48 | 15.8 | Truck track |
| | | | 25-Oct-02 | 2:57 | 25-Oct-02 | 3:13 | 1.0 | Passed station 1 downstream KELTS |
| | | | | | 25-Oct-02 | 14:30 | 0.0 | Eric boat track |
| | | | | | 30-Oct-02 | 14:30 | 0.0 | Eric boat track |
| | | | | | 13-Nov-02 | 11:12 | 0.0 | Eric boat track |
| | | | 15-Nov-02 | 1:51 | 15-Nov-02 | 16:44 | 1.0 | Detected downstream station 1 |
| | | | | | 22-Nov-02 | 14:04 | | North stumpfields west side by Eric |
| | | | | | 18-Dec-03 | 11:44 | | Hozomeen Boat Launch by Eric |
| | | | | | | | | Fate (end of field season 2002): Fish spawned around 15 km and kelted on the 25-Oct. It then held in the lower river until 22-Nov when it was detected on the US side off the river mouth. It then moved to the Hozomeen Boat Launch on the 18-Dec. |
| | | | | | 21-Mar-03 | 12:00 | -0.2 | Mobile track (seen by floaters) |
| | | 29-Mar-03 | 11:30 | -0.2 | Mobile track (seen by floaters) | | | |
| | | 29-Mar-03 | 14:30 | -0.2 | Recaptured by Terry in excellent condition. | | | |
| 02-Apr-03 | 20:53 | 03-Apr-03 | 0:52 | 1.0 | Passed station 1 upstream | | | |
| | | 10-Apr-03 | 15:22 | 11.2 | Mobile track | | | |
| | | 14-Jun-03 | 9:01 | 15.1 | Mobile track | | | |

Table 5. Summary of detections and migratory behaviour for each radio-tagged char released in the BC Skagit River in 2001, 2002, and 2003.

| Fish No. | Chan | Code | First detected | | Last detected | | Loc (rkm) | Comments / Fate |
|----------|------|------|----------------|-------|---------------|-------|-----------|---|
| | | | Date | Time | Date | Time | | |
| | | | | | 20-Jun-03 | 13:48 | 14.7 | Mobile track |
| | | | | | 21-Jul-03 | 10:23 | 15.7 | Boat track (seen by floaters) |
| | | | | | 12-Aug-03 | 11:51 | 15.8 | Truck track |
| | | | | | 15-Sep-03 | 11:59 | 15.5 | Boat track (seen by floaters) |
| | | | | | 02-Oct-03 | 11:46 | 15.5 | Truck track |
| | | | | | 08-Oct-03 | 10:57 | 16.0 | Boat track (visual) |
| | | | 09-Oct-03 | 6:14 | | | | Holding at and below station. Redds at station - fish may have spawned here . Holding details in station record. |
| | | | | | 10-Oct-03 | 2:00 | 18.1 | moved upstream of station 8 |
| | | | 10-Oct-03 | 6:37 | 13-Oct-03 | 0:16 | 18.1 | Last detected downstream station 8 |
| | | | 19-Oct-03 | 23:53 | 20-Oct-03 | 7:25 | 18.0 | Detected downstream station 8 |
| | | | | | 24-Oct-03 | 12:29 | 15.3 | Mobile track |
| | | | 25-Oct-03 | 18:48 | 27-Oct-03 | 1:57 | 18.0 | Passed station 8 upstream |
| | | | 30-Oct-03 | 3:04 | 30-Oct-03 | 3:05 | 18.0 | Detected upstream station 8 |
| | | | 31-Oct-03 | 1:44 | 04-Nov-03 | 6:03 | 18.0 | Passed station 8 downstream |
| | | | | | 04-Nov-03 | 9:08 | 17.5 | Raft track |
| | | | 04-Nov-03 | 18:49 | 04-Nov-03 | 20:16 | 18.0 | Detected downstream station 8 |
| | | | | | 13-Nov-03 | 7:56 | 11.0 | Truck track |
| | | | | | | | | Fate (end of field season 2003): Fish entered river on 3-Apr and held around 15.5km for most of the summer. It probably spawned around 18 km during the week of 2-Nov. It was last detected on 13-Nov at 11 km and had not left the system by the time the stations were removed on 2-Dec. |
| 47 | 5 | 10 | 14-Sep-02 | 17:10 | | | 15.2 | Release |
| | | | 23-Sep-02 | 3:54 | 23-Sep-02 | 20:40 | 1.0 | Detected u/s station 1 |
| | | | 25-Sep-02 | 19:25 | 30-Sep-02 | 22:27 | 1.0 | Detected u/s station 1 |
| | | | 03-Oct-02 | 21:30 | 04-Oct-02 | 6:17 | 18.1 | Detected downstream station 8 |
| | | | 07-Oct-02 | 1:14 | 07-Oct-02 | 3:30 | 18.1 | Detected downstream station 8 |
| | | | 12-Oct-02 | 2:16 | 12-Oct-02 | 3:45 | 18.1 | Detected downstream station 8 |
| | | | | | 13-Oct-02 | 9:12 | 16.0 | Boat track |
| | | | 15-Oct-02 | 4:20 | 15-Oct-02 | 5:31 | 18.1 | Passed station 8 upstream |
| | | | 15-Oct-02 | 11:29 | 15-Oct-02 | 19:31 | 18.1 | Passed station 8 downstream |
| | | | | | 20-Oct-02 | 10:49 | 15.5 | Truck track |
| | | | 25-Oct-02 | 23:54 | 26-Oct-02 | 0:06 | 1.0 | Passed station 1 downstream KELT |
| | | | | | | | | Fate (end of field season 2002): This fish dropped back downstream after release and then moved back up to spawn around 16 km after migrating up and downstream quite a bit. It kelted on the 26-Oct and moved back out into the lake on the US side. |
| | | | | | 16-Jan-03 | 13:24 | | Little Beaver Crk Basin by Eric |
| | | | | | 23-May-03 | 10:10 | -4.0 | Truck track |
| | | | | | 14-Jun-03 | 9:45 | -0.3 | Truck track |
| | | | | | 20-Jun-03 | 14:21 | -0.2 | Truck track |
| | | | | | 10-Jul-03 | 11:54 | -0.3 | Truck track |
| | | | | | 21-Jul-03 | 17:25 | -0.1 | Boat track |
| | | | | | 12-Aug-03 | 12:34 | -0.3 | Truck track |
| | | | | | 24-Aug-03 | 9:04 | -0.3 | Truck track |
| | | | | | 16-Sep-03 | 10:43 | 0.0 | Eric boat track |
| | | | | | 02-Oct-03 | 11:20 | -0.3 | Truck track |
| | | | | | 15-Oct-03 | 14:40 | -0.3 | Truck track |
| | | | | | 20-Oct-03 | 10:58 | 0.0 | Truck track |
| | | | | | 30-Oct-03 | 12:29 | 0.0 | Truck track |
| | | | | | 04-Nov-03 | 11:56 | -0.3 | Raft track |
| | | | | | 13-Nov-03 | 8:24 | 0.0 | Truck track |
| | | | | | | | | Fate (end of field season 2003): Fish was detected at river mouth on 23-May but never did travel up the river. It was last detected on 13-Nov at 0 km. |
| 48 | 5 | 16 | 14-Sep-02 | 17:26 | | | 15.2 | Release |
| | | | 19-Sep-02 | 23:58 | 20-Sep-02 | 8:08 | 1.0 | Passed station 1 downstream |
| | | | | | 25-Sep-02 | 6:54 | 0.0 | Mobile track |
| | | | 25-Sep-02 | 21:45 | 01-Oct-02 | 1:08 | 1.0 | Detected downstream station 1 |
| | | | | | 03-Oct-02 | 11:00 | 0.0 | Mobile track |
| | | | 11-Oct-02 | 21:47 | 11-Oct-02 | 23:27 | 1.0 | Passed station 1 upstream |
| | | | | | 12-Oct-02 | 12:11 | 4.1 | Boat track |
| | | | | | 13-Oct-02 | 13:35 | 9.0 | Boat track |
| | | | 19-Oct-02 | 2:42 | 19-Oct-02 | 2:51 | 1.0 | Passed station 1 downstream KELT |
| | | | | | | | | Fate (end of field season 2002): This fish dropped back downstream after being tagged and then moved back up to spawn on the 11-Oct. It kelted on the 19-Oct and moved back out into the lake on the US side. |

Table 5. Summary of detections and migratory behaviour for each radio-tagged char released in the BC Skagit River in 2001, 2002, and 2003.

| Fish No. | Chan | Code | First detected | | Last detected | | Loc (rkm) | Comments / Fate |
|---|------|------|----------------|-------|---------------|-------|--------------|---|
| | | | Date | Time | Date | Time | | |
| Fate (end of field season 2003): Fish was not detected during this field season. | | | | | | | | |
| 49 | 5 | 17 | 25-Sep-02 | 13:22 | | | 16.7 | Release |
| | | | 25-Sep-02 | 22:14 | 25-Sep-02 | 23:50 | 18.1 | Passed station 8 upstream |
| | | | | | 03-Oct-02 | 12:14 | 20.2 | Mobile Track |
| | | | 04-Oct-02 | 0:06 | 04-Oct-02 | 0:32 | 18.1 | Passed station 8 downstream |
| | | | | | 13-Oct-02 | 9:02 | 16.2 | Boat track |
| | | | 14-Oct-02 | 0:22 | 14-Oct-02 | 4:22 | 18.1 | Detected downstream station 8 |
| | | | 15-Oct-02 | 1:28 | 15-Oct-02 | 4:30 | 18.1 | Passed station 8 upstream |
| | | | 20-Oct-02 | 3:04 | 20-Oct-02 | 3:29 | 18.1 | Passed station 8 downstream |
| | | | 21-Oct-02 | 21:23 | 21-Oct-02 | 23:30 | 18.1 | Passed station 8 upstream |
| | | | 22-Oct-02 | 21:44 | 22-Oct-02 | 21:51 | 18.1 | Detected upstream station 8 |
| | | | 23-Oct-02 | 2:59 | 24-Oct-02 | 0:21 | 18.1 | Passed station 8 downstream |
| | | | 24-Oct-02 | 23:06 | 25-Oct-02 | 2:07 | 18.1 | Detected downstream station 8 |
| | | | 27-Oct-02 | 0:27 | 27-Oct-02 | 22:20 | 18.1 | Passed station 8 upstream |
| | | | 28-Oct-02 | 4:51 | 28-Oct-02 | 5:14 | 18.1 | Passed station 8 downstream |
| | | | 29-Oct-02 | 0:49 | 30-Oct-02 | 1:12 | 18.1 | Detected downstream station 8 |
| | | | 02-Nov-02 | 5:26 | 02-Nov-02 | 5:33 | 1.0 | Passed station 1 downstream KELT |
| Fate (end of field season 2002): Fish moved upstream after being tagged and travelled back and forth past 18 km numerous times between the 25-Sep and 30-Oct. It kelted on the 2-Nov and moved back out into the lake on the US side. | | | | | | | | |
| Fate (end of field season 2003): Fish was not detected during the field season. | | | | | | | | |
| 50 | 5 | 11 | 25-Sep-02 | 13:29 | | | 16.7 | Release |
| | | | | | 13-Oct-02 | 9:02 | 16.2 | Boat track |
| | | | 26-Oct-02 | 23:21 | 26-Oct-02 | 23:30 | 1.0 | Passed station 1 downstream KELT |
| | | | 29-Oct-02 | 2:22 | 29-Oct-02 | 19:09 | 1.0 | Detected downstream station 1 |
| Fate (end of field season 2002): This fish held around 16 km after release and spawned near that location. It kelted on the 26-Oct and was last detected on the 29-Oct downstream station 1. It must have moved out into the lake on the US side because it was not detected in any further mobile tracks. | | | | | | | | |

Table 6. Summary of cross-border movements of radio-tagged char in the upper Skagit River watershed in 2001 - 2003.

| For fish Radio-Tagged in BC | | | | | |
|-----------------------------|--|--|--|--|----------------------------------|
| Fish No. | Fall (F), Summer (S) or Spring (Sp) tag applicaion | Was fish able to cross border in 2003? 1=Yes | Did fish cross the border in 2003? (1 = Yes) | No. of times fish crossed the border (2001-2003) | Highest River km reached in 2003 |
| 1 | F | 1 | | 2 | 3.6 |
| 2 | F | 1 | 1 | 4 | 24.8 |
| 3 | F | 1 | | 3 | |
| 4 | F | 1 | | 2 | 32.5 |
| 5 | F | | | | |
| 6 | F | 1 | 1 | 3 | 8.6 |
| 7 | F | 1 | 1 | 5 | d/s 32.5 |
| 8 | F | | | 3 | |
| 9 | F | 1 | 1 | 5 | 0 |
| 10 | F | | | | |
| 11 | S | | | | |
| 12 | S | 1 | | 1 | -4 |
| 13 | n/a | | | | |
| 14 | S | | | | |
| 15 | S | | | | |
| 16 | S | 1 | 1 | 3 | u/s 32.5 Sumallo |
| 17 | S | | | 2 | |
| 18 | S | | | | |
| 19 | S | 1 | 1 | 3 | 1 |
| 20 | S | | | 2 | |
| 21 | S | 1 | | 1 | |
| 22 | S | 1 | 1 | 3 | 10.5 |
| 23 | S | 1 | 1 | 3 | 0 |
| 24 | S | | | | |
| 25 | S | | | | |
| 26 | S | 1 | | 1 | |
| 27 | S | 1 | 1 | 3 | 1 |
| 28 | S | 1 | 1 | 2 | 18 |
| 29 | S | 1 | 1 | 2 | u/s 32.5 Sumallo |
| 30 | S | 1 | 1 | 3 | -1 |
| 31 | S | 1 | 1 | 3 | 16 |
| 32 | S | 1 | | | 12.3 |
| 33 | S | 1 | 1 | 2 | 18 |
| 34 | S | 1 | | 1 | |
| 35 | S | 1 | 1 | 4 | 18 |
| 36 | S | | | | |
| 37 | S | 1 | 1 | 3 | 1 |
| 38 | F | 1 | 1 | 3 | 0 |
| 39 | F | 1 | | 1 | |
| 40 | F | 1 | 1 | 2 | 1 |
| 41 | F | 1 | | 1 | |
| 42 | F | 1 | 1 | 5 | u/s 1.0 |
| 43 | F | 1 | | 1 | -5 |
| 44 | F | | | | |
| 45 | F | | | | |
| 46 | F | 1 | | 2 | u/s 18.1 |
| 47 | F | 1 | 1 | 3 | 0 |
| 48 | F | 1 | | 1 | |
| 49 | F | 1 | | 1 | |
| 50 | F | 1 | | 1 | |
| 51 | Sp | 1 | | | 29.1 |
| 52 | Sp | 1 | 1 | 2 | 0.5 Sumallo |
| 53 | Sp | 1 | 1 | 2 | 2.5 |
| 54 | Sp | 1 | 1 | 2 | 25.2 |
| 55 | Sp | 1 | 1 | 3 | 3.2 |
| 56 | Sp | 1 | 1 | 2 | 18 |
| 57 | Sp | 1 | 1 | 3 | 5.9 |
| 58 | Sp | 1 | 1 | 3 | 4.8 Sumallo |
| 59 | Sp | Unk | | | 1 |
| 60 | Sp | 1 | 1 | 2 | 20 |
| 61 | Sp | Unk | | | 21.5 |
| 62 | Sp | Unk | | | 3.75 Sumallo |
| 63 | Sp | 1 | 1 | 1 | u/s 32.5 Sumallo |
| 64 | Sp | 1 | 1 | 1 | 22.9 |
| 65 | Sp | 1 | 1 | 2 | 6.8 |
| 66 | Sp | 1 | 1 | 1 | 17 |
| Totals | | 48 | 32 | 114 | |

*Spring fish were tagged between Mar and Apr
 *Summer fish were tagged between May and Aug
 *Fall fish were tagged between Sept and Oct

Tagged in 2001
 Tagged in 2002
 Tagged in 2003

Table 7. Pertinent data collected for each char RECAPTURED and sampled during the Skagit River char telemetry program, 2001 - 2003..

| Fish | | Sex | | Radio Tagged? (Y/N) | Recapture | | | | Released Alive? (Y/N) | Release | | | | Radio Tag | | Spaghetti Tag | | Spaghetti Tag | | Fork Length (mm) | Girth (mm) | Weight (g) | Angler Initials | Condition at Release |
|-----------------------------|--------------|-----------------|-------------|---------------------|-----------|-------|-------------------------|-----------------|-----------------------|--------------|-------------------------|-----------------|-----|-----------|----|---------------|------------|---------------|-------|------------------|------------|------------|-----------------|----------------------|
| RT Recap. No. | Original No. | Field judgement | Confirmed | | Date | Time | Rkm | UTM | | UTM | Time | Rkm | UTM | UTM | Ch | Code | (Y/N) | No. | Color | | | | | |
| Radio Tagged Fish | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 11 | F | see notes | Y | 14-Aug-02 | 7:30 | 1.0 km | station 1 | Y | 7:35 | 1.0 km | | | 5 | 55 | Y | 516 | white | | | CEJ | poor | | |
| 2 | 6 | M | | Y | 13-Aug-02 | 10:50 | 7.8 km | 638127 5435282 | Y | 12:38 | 7.8 km | 638127 5435282 | | 5 | 51 | N | BC01119 | pink | 582 | 251 | 2000 | CEJ | Excellent | |
| 3 | 6 or 18 | M | | | 26-Aug-02 | 14:40 | 9.0 km | 637901 5435957 | Y | 14:42 | 9.0 km | 637901 5435957 | | 7 | 35 | Y | BC01119 | pink | | | | JM | Excellent | |
| 4 | 19 | | | Y | 03-Sep-02 | | 15.1 km | | Y | | 15.1 km | | | 7 | 44 | Y | BC01124 | pink | | | | RH | Poor | |
| 5 | 40 | F | | Y | 14-Sep-02 | 8:45 | 0.1 km | | Y | 8:50 | 0 km | | | 7 | 43 | Y | BC 01120 | pink | | | | JR | Excellent | |
| 6 | 34 | M | | Y | 03-Oct-02 | pm | Mouth of Big Beaver Crk | | Y | pm | Mouth of Big Beaver Crk | | | 5 | 19 | Y | BC 01125 | pink | 570 | | 1875 | EJ | Excellent | |
| 7 | NT 31 | M | | Y | 29-Mar-03 | 10:00 | 0.5 | | Y | 13:02 | 0.0 | | | 5 | 30 | Y | BC 01159 | pink | 594 | 241 | | CEJ | Excellent | |
| 8 | 46 | F | | Y | 29-Mar-03 | 14:30 | -0.2 | | Y | 15:00 | -0.2 | | | 5 | 14 | Y | BC 01149 | pink | 593 | 264 | | T | Excellent | |
| 9 | 59 | F | | Y | 10-Apr-03 | 10:40 | 0.6 | | Y | 10:42 | 0.6 | 641675 5430805 | | 5 | 35 | Y | 229 | pink | same | same | n/a | JR | Excellent | |
| 10 | 20 | M | | Y | 17-Apr-03 | 12:30 | 0.0 | | Y | 12:35 | 0.0 | | | 7 | 38 | Y | BC 01129 | pink | 590 | 272 | n/a | R | Excellent | |
| No Radio Tag Applied | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | NT3 | F | F | N | 10-Oct-01 | 8:00 | 0.3 km | | Y | 8:05 | 0.3 | | | | | | anchor tag | 103 | brown | | | CEJ | Excellent | |
| 2 | NT2 | M | M | N | 27-Jul-02 | 11:30 | 0.5 km | log run | N | not released | | | | | | | anchor tag | 000102 | brown | 51.3 | 22.5 | 1200 | JR | dead |
| 3 | ? | M | not checked | Y | 19-Aug-02 | 11:00 | 16.8 km | 634463 54413260 | Y | 13:09 | 16.6 km | 0634610 5441166 | | 7 | 40 | anchor tag | 903 | yellow | 562 | 220 | 1600 w/tag | JR | Excellent | |
| 4 | NT 6 | F | F | Y | 27-Aug-02 | 8:29 | 6.7 | 638800 5434173 | Y | 9:56 | 5.5 | 639407 5433669 | | 7 | 33 | anchor tag | 106 | brown | 485 | 203 | 1090 w/tag | JM | Excellent | |

Notes:

¹ DV = Dolly Varden; BT = bull trout

Table 8. Summary of redds observed during swim surveys of the Skagit River, BC (downstream of rkm 18.0), on 8 and 9 October, 2003.

Snorkle Crew: CEJ Mussell, Pier van Dishoeck
 Raft and Telemetry Crew: Jack Mussell, Iain Lunn

Weather: Rain with clear breaks

The Upper Skagit River was floated and redds were counted between the 26 Mile Bridge (18 km) and the Fishing Boundary (0 km).

No Redds were observed in the section between the high bank (8.7 km) and the Fishing Boundary (0km). Redds were between 15.7 km and 17 km.

| Date | Time | Number of Redds | UTM1 | UTM2 |
|--------|-------|-----------------|--------------------------------------|------|
| 08-Oct | 10:00 | 3 | (GPS Not Working) | |
| 08-Oct | 10:20 | 2 | Redds were between rkm 15.7 and 17.0 | |
| 08-Oct | 10:35 | 4 | | |
| 08-Oct | 10:40 | 1 | | |
| 08-Oct | 11:12 | 1 | | |
| | TOTAL | 11 | | |

Table 9. Summary of swim survey observations (counts of char and rainbow trout) in the BC Skagit River, 2003.
See Appendicies for additional swim survey data.

| Date | Section | rkm | Number of Char Observed | | | | | Total No. Char | No. Rainbow Trout* |
|--------|---|--|-------------------------|---------------------|------------------------|------------|--------------|----------------|--------------------|
| | | | no tag | pink - radio tagged | white - spaghetti only | anchor tag | antenna only | | |
| 6-Mar | Suspension Bridge to US Border | 1.5 -1.0 | 3 | 1 | | 1 | 5 | 9 | |
| 21-Mar | Suspension Bridge to below fishing boundary | 1.5 - 0.4 | 9 | 1 | | 1 | 11 | 3 | |
| 22-Mar | High bank to below fishing boundary | 8.7 - 0.2 | 4 | | | | 4 | 3 | |
| 29-Mar | Suspension Bridge to US Border | 1.5 -1.0 | 12 | 2 | 2 | | 16 | 14 | |
| 21-Jul | 26 Mile to 0 km | 18 - 0.0 | 78 | 11 | 0 | 0 | 1 | 90 | 1646 |
| 22-Jul | Sumallo Grove to 26 Mile | 32.5 - 18.0 | 50 | 6 | 1 | 0 | 1 | 58 | 679 |
| 23-Jul | Sunshine Valley Bridge to Sumallo Confluenc | Sunshine Valley to Hyw; Sumallo rkm 3.7 - 0.1 | 6 | | | | | 6 | 36 |
| 14-Sep | Sumallo Grove to Campsite 41 Silver Tip | 32.5 - 20.2 | 33 | 1 | | | 1 | 35 | 429 |
| 15-Sep | Campsite 41 Silver Tip to Highbank | 20.2 - 8.5 | 44 | 1 | | | 1 | 46 | 825 |
| 16-Sep | Highbank to Fishing Boundary | 8.5 - 0.0 | 77 | 4 | 1 | 3 | | 85 | 1842 |
| 8-Oct | 26 Mile to High bank | 18 - 8.5 | 44 | 1 | | | | 45 | 207 |
| 9-Oct | High bank to fishing boundary | 8.5 - 0.0 | 45 | 1 | | | 1 | 47 | 735 |

* Expanded counts of rainbow trout are presented in respective Appendicies

Table 10. Skagit River swim survey data and expanded counts of char, 2003.
 Note: Counts of char in the Sumallo River on 23 July are not included in this summary (see Table 9).

| Skagit River Survey Section | | | | | | | | |
|-----------------------------|--|----------------|---|----------------|---|----------------|--|----------------|
| Survey Dates | Sumallo Mouth to 26 Mile Bridge (rkm 32.5 - 18.0) | | 26 Mile Bridge to High Bank (rkm 18.0 - 8.7) | | High Bank to US Border (rkm 8.7 - 0.0) | | Sumallo Mouth to US Border (rkm 32.5 - 0.0) | |
| | Total Count | Expanded Count | Total Count | Expanded Count | Total Count | Expanded Count | Total Count | Expanded Count |
| July 21, 22 | 58 | 68 | 33 | 42 | 57 | 73 | 148 | 183 |
| Sept 14,15,16 | 35 | 70 | 46 | 92 | 85 | 85 | 166 | 247 |
| Oct 8, 9 | 81* | 81* | 45 | 90 | 47 | 94 | 173 | 265 |

Total Count is the number of char seen by the floaters.

Expanded Count is based on the observer efficiency of the survey crew, determined by the ratio of number of tagged char observed (total count) divided by the number of radio-tagged char detected, by survey section.

* The number of char in this section was estimated as we did not conduct a float in the upper section (rkm 32.5-18.0) during the Oct 8-9 surveys. The estimate was produced by combining the expanded counts on the 2 previous floats (68 and 70 = 138) and dividing this by the total number of radio tags detected in this section (12) during these floats (i.e., a "mark rate"). This number (11.5) was then multiplied by the number of radio tags present in this section on Oct 9 (n = 7) to give an estimate of the number of char in the section (81).

FIGURES



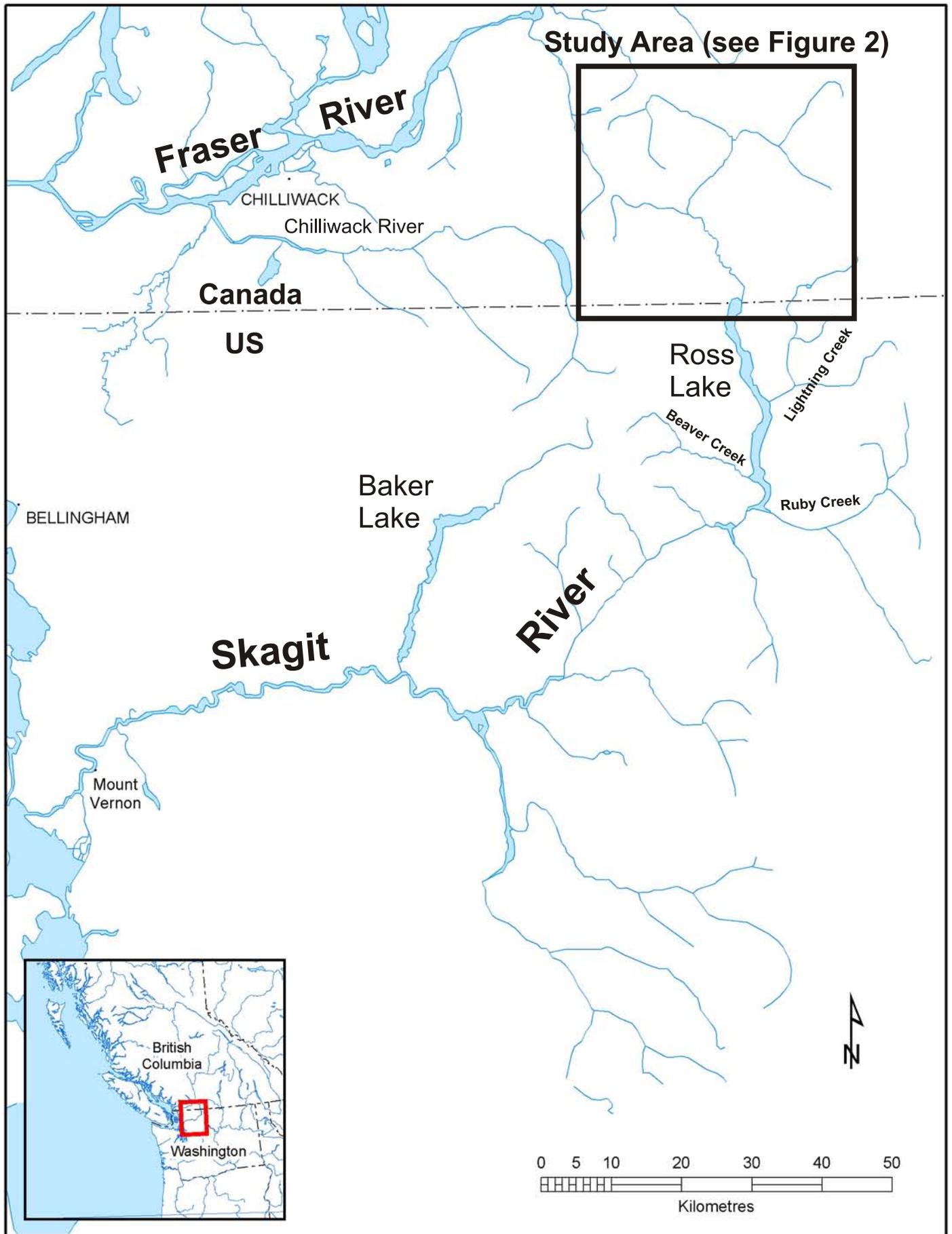


Figure 1. Location of the Skagit River watershed and its position in BC and Washington.

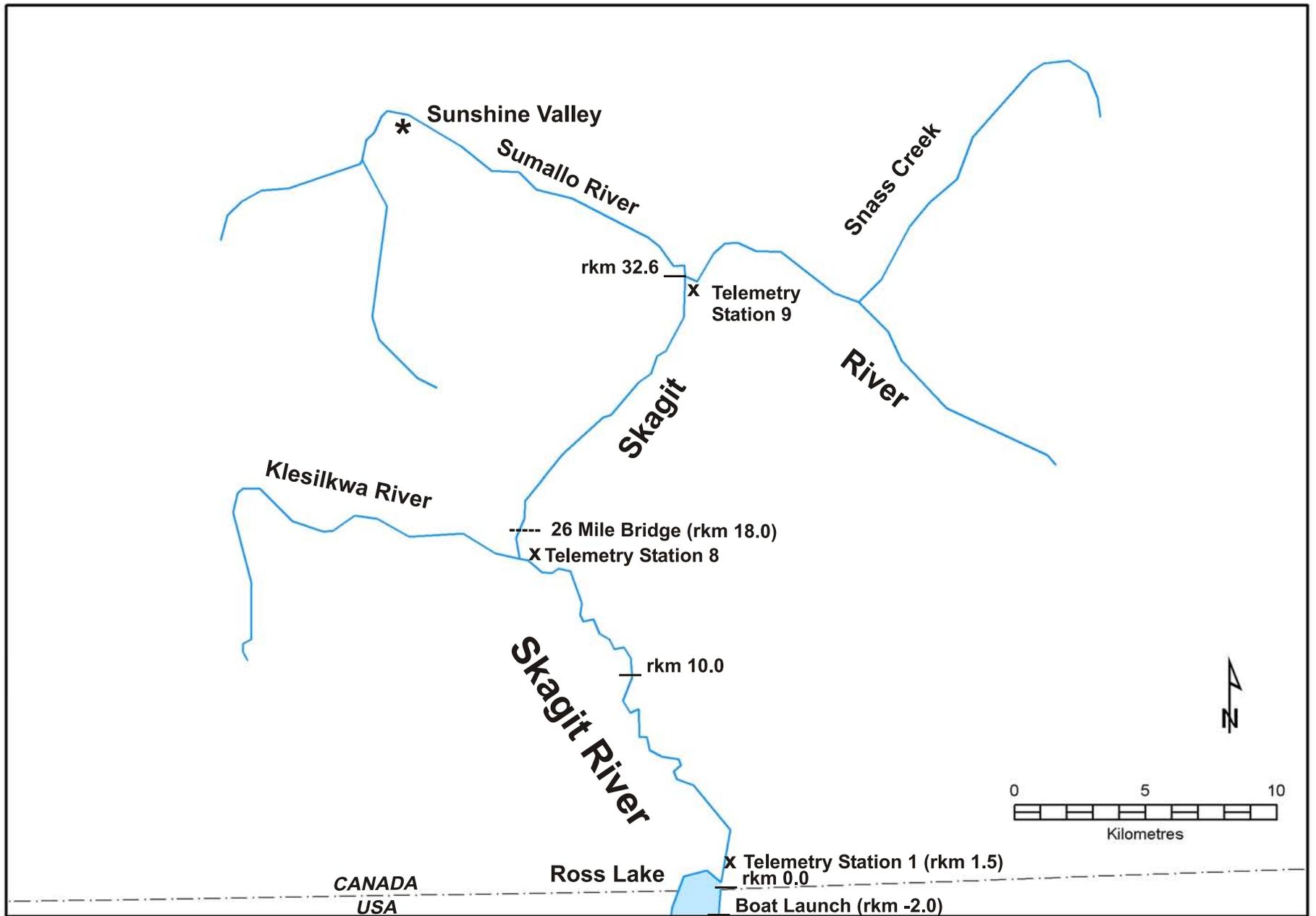


Figure 2. Study area and key reference points for the Upper Skagit Watershed Native Char Project 2003-04.

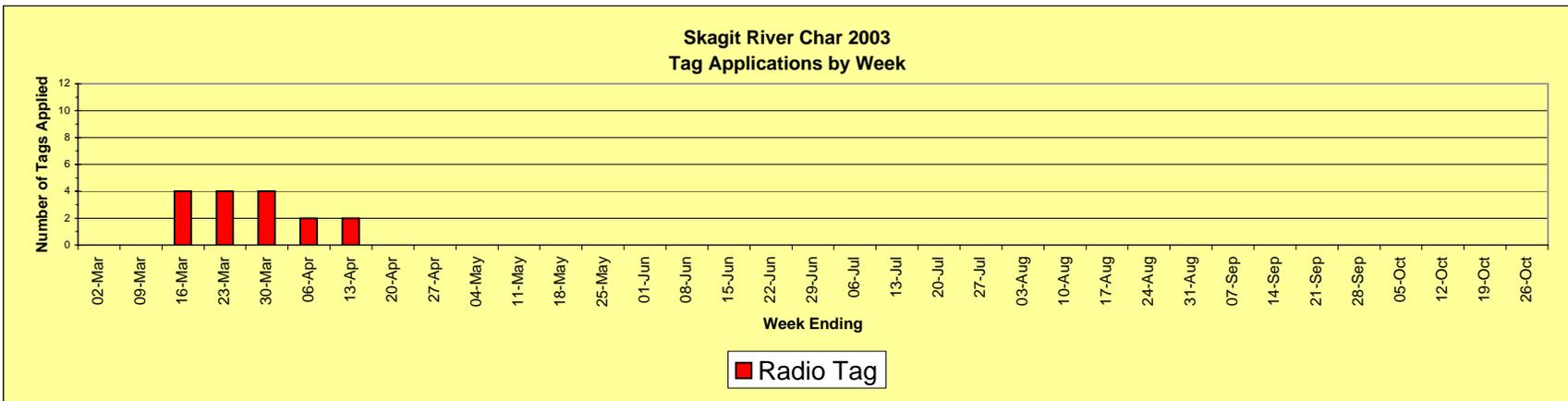
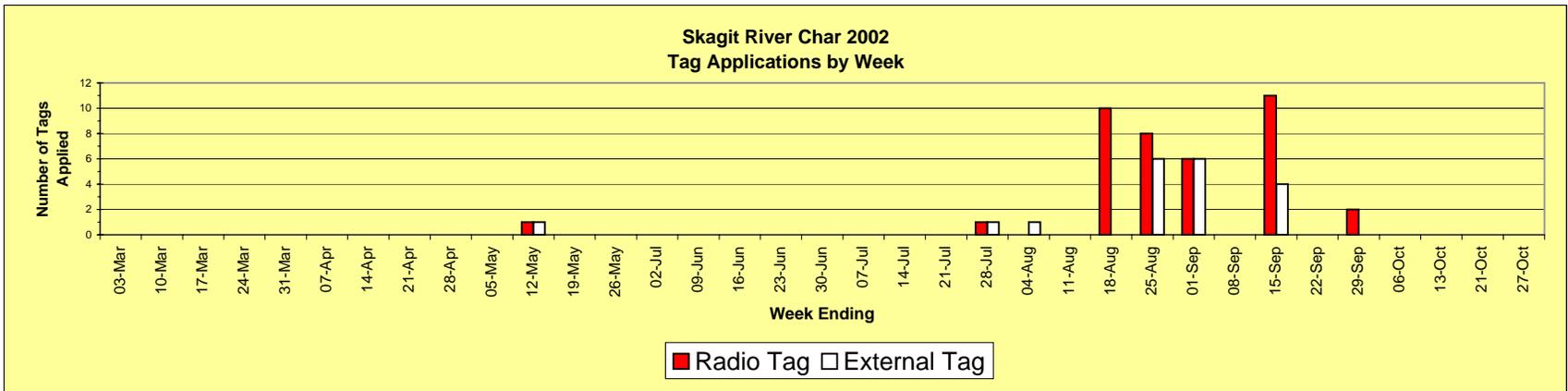
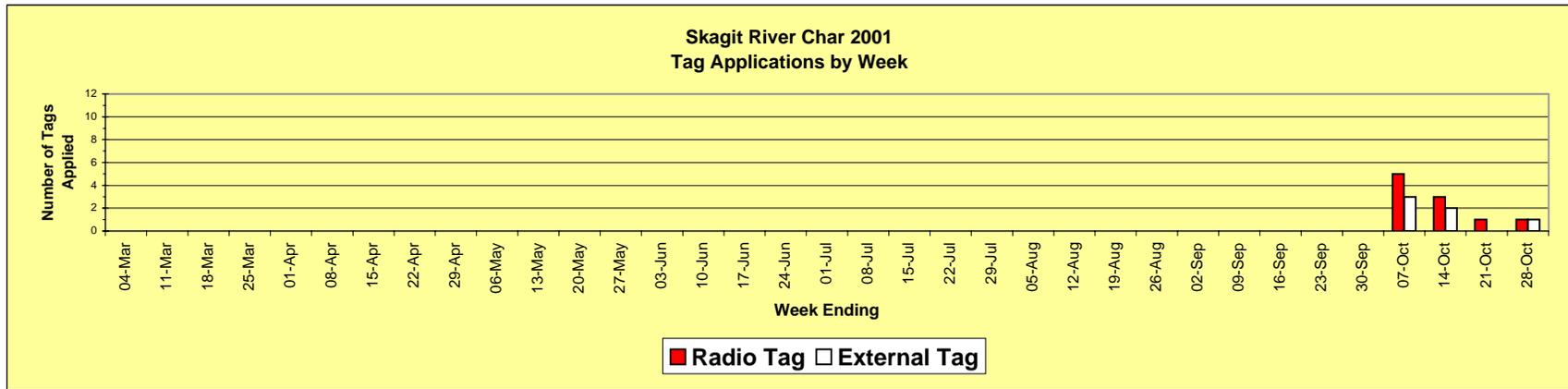


Figure 3. Illustrations of the timing of tag applications for radio-tagged and external-tagged char in the Skagit River, BC, in 2001, 2002, and 2003.

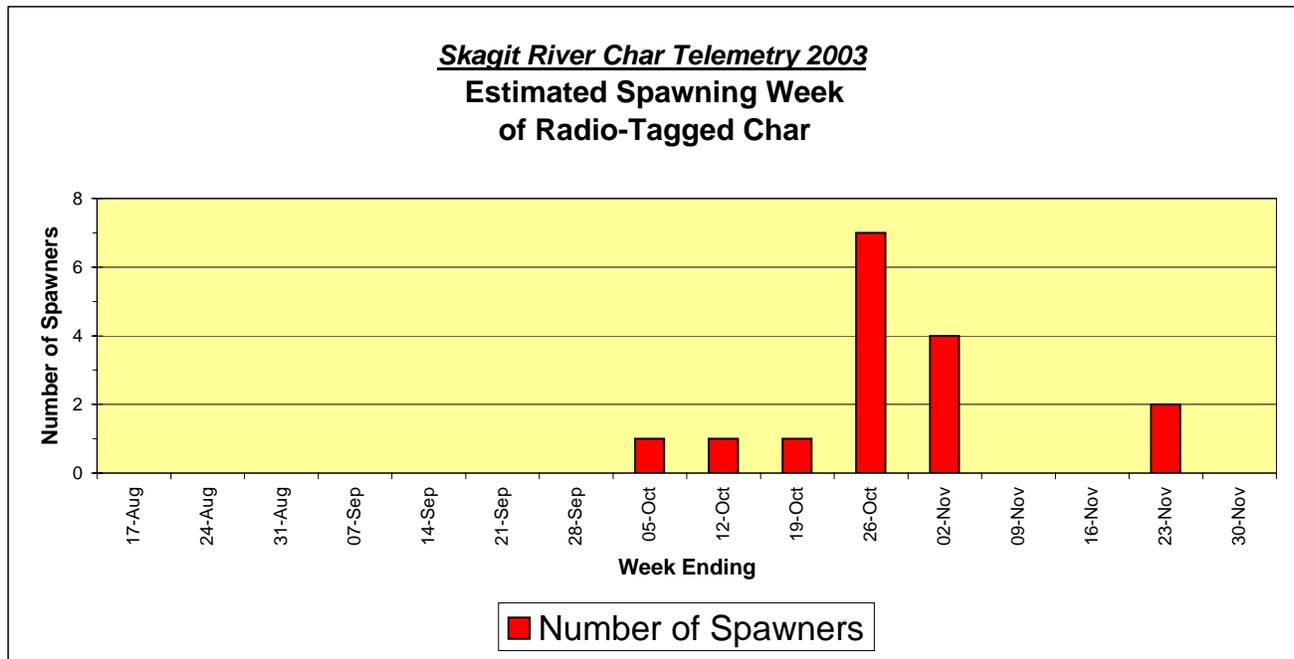
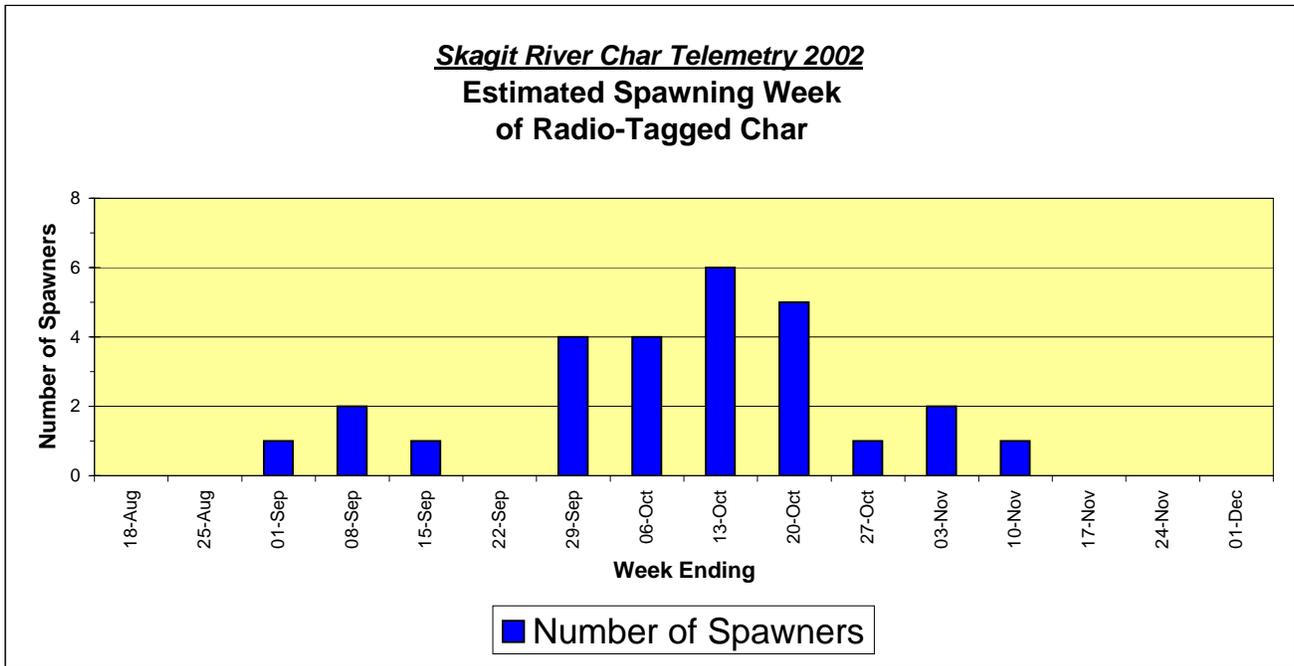


Figure 4. Illustration of the estimated timing of spawning events of radio-tagged char in the Skagit River watershed in 2002 and 2003. Data presented are for all radio-tagged char that spawned in 2002 and 2003 including both Canadian and US tagged char, for which an estimated time of spawning (by week) could be positively assigned (2002: $n = 27$; 2003: $n = 16$).

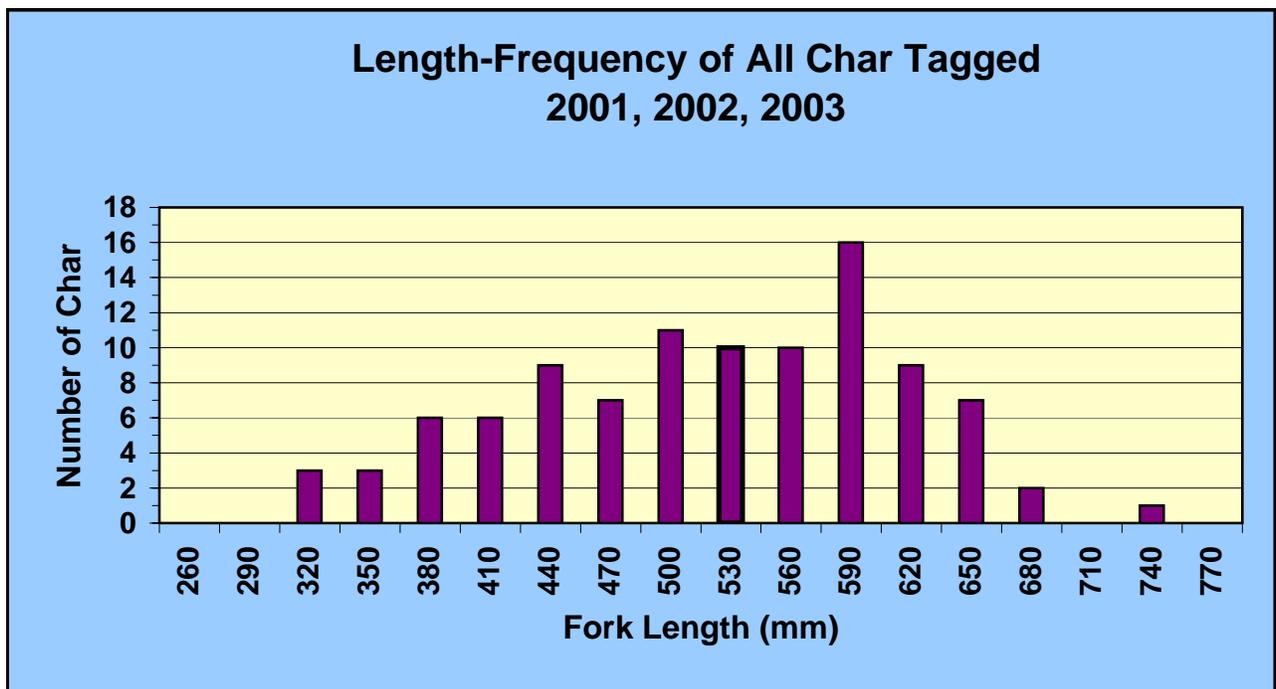
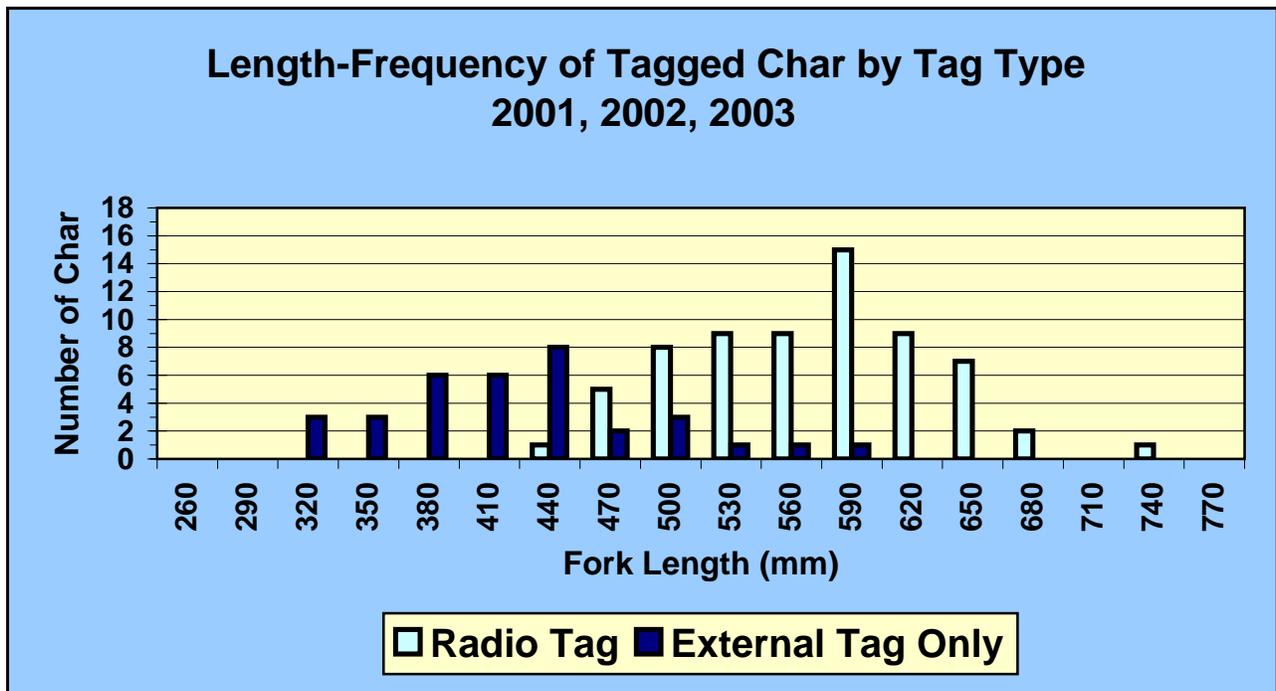


Figure 5. Length-frequency (fork length, mm) of char tagged with external-only and radio tags in the BC Skagit River during the 2001, 2002 and 2003 field programs. The top chart compares the distribution of tags, by fish length, for both external and radio tags. The bottom chart illustrates the tag distribution, by fish length, for all char tagged ($n = 100$).

| Fork Length (mm) | NUMBER OF CHAR PER SIZE GROUP | | | | | | | | | | All Ages |
|------------------|-------------------------------|---|---|---|---|---|---|----|----|---|----------|
| | AGE (Years) | | | | | | | | | | |
| | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | | |
| 720-739 | | | | | | | | | | | 1 |
| 700-719 | | | | | | 1 | | | | | 1 |
| 680-699 | | | | 1 | 1 | 1 | 1 | | | | |
| 660-679 | | | | 1 | 1 | 1 | 1 | | | | |
| 640-659 | | | | 1 | | 1 | | | | | 2 |
| 620-639 | | | | | 1 | 2 | | | 2 | | 4 |
| 600-619 | | | | 1 | | 1 | | | 1 | | 4 |
| 580-600 | | | 4 | 4 | 2 | 1 | | | 1 | | 12 |
| 560-579 | | | | 3 | 1 | | | | | | 5 |
| 540-559 | | | 1 | | 1 | | | 1 | | 1 | 4 |
| 520-539 | | | 1 | | | 2 | | | | | 7 |
| 500-519 | | 1 | 1 | 1 | 2 | | | | | | 5 |
| 480-499 | | 2 | 1 | 1 | | | 4 | 1 | | | 8 |
| 460-479 | | | 3 | 1 | | | | | | | 5 |
| 440-459 | | | | | 2 | 1 | | | | | 6 |
| 420-439 | 1 | 1 | 1 | 2 | | 1 | | | | | 2 |
| 400-419 | | 2 | 1 | 1 | | | | | | | 3 |
| 380-399 | 1 | 2 | | | | | | | | | 6 |
| 360-379 | | 1 | 1 | | | | | | | | 2 |
| 340-359 | 2 | | 1 | | | | | | | | 3 |
| 320-339 | 1 | 1 | | | | | | | | | 2 |
| 300-319 | 1 | 1 | | | | | | | | | 3 |
| 280-299 | | | | | | | | | | | |
| | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | | All Ages |
| | AGE (Years) | | | | | | | | | | |

Figure 6. Length at age distribution for a sample size of 81 char captured in the Skagit River, BC, in 2001, 2002, and 2003. Age data (years) are from pectoral fin ray analysis. Lengths are fork lengths (mm).

APPENDICES



Appendix A

**Public notice of Skagit River Char Telemetry Program 2003
posted at telemetry stations**



SKAGIT RIVER CHAR BIOTELEMETRY PROGRAM 2003

**THIS EQUIPMENT IS THE PROPERTY OF
MINISTRY OF WATER, LAND AND AIR PROTECTION
LOWER MAINLAND DISTRICT
CULTUS LAKE, BC**

ATTENTION

The Ministry of Water, Land and Air Protection, in conjunction with the Fish and Wildlife Authority for Washington State, is conducting a study of the migration characteristics of Skagit River char (bull trout and Dolly Varden). As a part of this study, several char, captured in the Skagit River and Ross Lake, will be fitted with individually coded radio transmitters and released.

Telemetry stations, such as the one at this site, have been established at strategic locations along the Skagit River to record the presence and passage of radio-tagged char as they migrate upstream to their respective holding and spawning grounds, and again when these char pass downstream following spawning. This study will provide fisheries managers with critical information regarding the run timing, migration characteristics, spawning behaviour, and post-spawning survival of Skagit River char, and thus better management of the resource.

Please report any observed damage of this equipment to:

**Tom Blackbird
Ministry of Water, Land and Air Protection
BC Parks
Lower Mainland District
Cultus Lake, BC V2R H6
Phone: 604-824-2304**

THANK YOU FOR YOUR INTEREST

Appendix B

Biological and tag data for char captured and released in Washington State from the US component of the Upper Skagit Watershed Native Char Project 2001



Appendix B. Biological and tag data for char captured and released in Washington state from the US component of the Upper Skagit Watershed Native Char Project 2001. Data Provided by Eric Jeans, R2 Consultants, Washington.

| Species | Date | Sex | Fork Length (mm) | Weight (g) | Site | Floy Anchor Tag* | Scale Taken? | DNA Sample Taken? | CART Tag Frequency | Channel | Code | Acoustic Echo | Echo Delay | Recaptured? |
|---------|-----------|-----|------------------|------------|---------------|------------------|--------------|-------------------|--------------------|---------|------|---------------|------------|---|
| NC | 29-Aug-01 | m | 604 | 2,150 | Big Beaver Cr | n/a | Yes | Yes | n/a | n/a | n/a | n/a | n/a | |
| NC | 18-Sep-01 | m | 538 | 1,340 | Big Beaver Cr | y-0903 | Yes | Yes | n/a | n/a | n/a | n/a | n/a | |
| NC | 18-Sep-01 | f | 627 | 2,860 | Big Beaver Cr | y-0904 | Yes | Yes | n/a | n/a | n/a | n/a | n/a | |
| NC | 18-Sep-01 | f | 532 | 1,250 | Big Beaver Cr | y-0905 | Yes | Yes | n/a | n/a | n/a | n/a | n/a | Recaptured at mouth of Ruby Cr. (27 Sep 2001) |
| NC | 18-Sep-01 | m | 461 | 1,000 | Big Beaver Cr | y-0906 | Yes | Yes | n/a | n/a | n/a | n/a | n/a | |
| NC | 18-Sep-01 | m | 532 | 1,400 | Big Beaver Cr | y-0907 | Yes | Yes | n/a | n/a | n/a | n/a | n/a | |
| NC | 18-Sep-01 | m | 655 | 2,870 | Big Beaver Cr | y-0908 | Yes | Yes | n/a | n/a | n/a | n/a | n/a | |
| NC | 18-Sep-01 | f | 700 | 3,180 | Big Beaver Cr | y-0909 | Yes | Yes | n/a | n/a | n/a | n/a | n/a | |
| NC | 18-Sep-01 | m | 487 | 990 | Big Beaver Cr | y-0910 | Yes | Yes | n/a | n/a | n/a | n/a | n/a | |
| NC | 19-Sep-01 | m | 570 | 1,680 | Ruby Cr | n/a | Yes | Yes | 149.320 | 1 | 5 | 137 | 23 | |
| NC | 19-Sep-01 | m | 501 | 1,110 | Ruby Cr | w-0951 | Yes | Yes | n/a | n/a | n/a | n/a | n/a | |
| NC | 27-Sep-01 | m | 683 | 2,850 | Lightning Cr | n/a | Yes | Yes | 149.320 | 1 | 3 | 137 | 23 | |
| NC | 28-Sep-01 | m | 470 | 960 | Big Beaver Cr | y-0911 | Yes | Yes | n/a | n/a | n/a | n/a | n/a | |
| NC | 28-Sep-01 | f | 520 | 1,450 | Big Beaver Cr | y-0912 | Yes | Yes | n/a | n/a | n/a | n/a | n/a | |
| NC | 28-Sep-01 | f | 675 | 3,350 | Big Beaver Cr | y-0913 | Yes | Yes | n/a | n/a | n/a | n/a | n/a | |
| NC | 28-Sep-01 | m | 669 | 2,550 | Big Beaver Cr | n/a | Yes | Yes | 149.320 | 1 | 4 | 137 | 23 | |
| NC | 28-Sep-01 | m | 672 | 1,940 | Big Beaver Cr | y-0915 | Yes | Yes | n/a | n/a | n/a | n/a | n/a | |
| NC | 28-Sep-01 | m | 645 | 2,400 | Lightning Cr | n/a | Yes | Yes | 149.320 | 1 | 7 | 137 | 23 | |
| NC | 16-Oct-01 | m | 687 | 2,750 | Big Beaver Cr | n/a | Yes | Yes | 149.320 | 1 | 6 | 137 | 23 | |

NC = native char; m = male; f = female

* y = yellow; w = white; b = brown

Appendix C

Biological and tag data for char captured and released in Washington state from the US component of the Upper Skagit Watershed Native Char Project 2002



Appendix C. Biological and tag data for char captured and released in Washington state from the US component of the Upper Skagit Watershed Native Char Project 2002. Data Provided by Eric Jeans, R2 Consultants, Washington.

| Species | Date | Sex | Fork Length (mm) | Weight (g) | Site | Floy Tag | DNA Tissue | Channel | Code | Acoustic Echo | Echo delay | Temp Archive Tag | Condition |
|---------|-----------|-----|------------------|------------|---------------|----------|------------|---------|------|---------------|------------|------------------|-----------|
| NC | 03-Oct-02 | f | 535 | 1,610 | Big Beaver Cr | y-0911 | X | 1 | 208 | 612 | 93 | 1745 | 1 |
| NC | 03-Oct-02 | m | 518 | 1,490 | Big Beaver Cr | n/a | X | 1 | 209 | 512 | 78 | 1574 | 1 |
| NC | 03-Oct-02 | m | 515 | 1,370 | Big Beaver Cr | n/a | X | 1 | 211 | 562 | 85 | 1380 | 1 |
| NC | 03-Oct-02 | f | 625 | 3,150 | Big Beaver Cr | y-0919 | X | 1 | 212 | 212 | 34 | n/a | 1 |
| NC | 04-Oct-02 | m | 587 | 1,980 | Big Beaver Cr | y-0921 | X | 5 | 72 | n/a | n/a | n/a | 1 |
| NC | 04-Oct-02 | m | 541 | 1,650 | Big Beaver Cr | y-0922 | X | 1 | 210 | 162 | 27 | n/a | 1 |
| NC | 09-Oct-02 | m | 551 | 1,450 | Ruby Cr | w-0952 | X | 5 | 71 | n/a | n/a | n/a | 1 |
| NC | 09-Oct-02 | m | 591 | 2,540 | Ruby Cr | w-0953 | X | 5 | 73 | n/a | n/a | n/a | 1 |
| NC | 09-Oct-02 | m | 598 | 2,670 | Ruby Cr | w-0954 | X | 5 | 79 | n/a | n/a | n/a | 1 |
| NC | 09-Oct-02 | m | 606 | 2,850 | Big Beaver Cr | y-0925 | X | 5 | 74 | n/a | n/a | n/a | 1 |
| NC | 09-Oct-02 | m | 492 | 1,275 | Big Beaver Cr | y-0924 | X | 5 | 75 | n/a | n/a | n/a | 1 |
| NC | 17-Oct-02 | m | 675 | 2,350 | Big Beaver Cr | y-0923 | X | 5 | 78 | n/a | n/a | n/a | 1 |
| NC | 17-Oct-02 | m | 631 | 2,650 | Ruby Cr | w-0956 | X | 5 | 76 | n/a | n/a | n/a | 1 |
| NC | 17-Oct-02 | m | 695 | 2,750 | Ruby Cr | w-0954 | X | 5 | 77 | n/a | n/a | n/a | 1 |
| NC | 18-Oct-02 | f | 560 | 2,050 | Big Beaver Cr | y-0926 | X | 5 | 70 | n/a | n/a | n/a | 1 |

Appendix D

Summary of detections and migratory behavior for each radio-tagged char released in Washington in 2001 and 2002 that crossed the international border and ventured into the BC Skagit River in 2003



Appendix D. Summary of detections and migratory behavior for each radio-tagged char released in Washington in 2001 and 2002 that crossed the international border and ventured into the BC Skagit River in 2003

| Fish No. | Channel Code | First detected | | Last detected | | Location (rkm) | Comments / Fate | |
|---|--------------|----------------|-----------|---------------|---------------------------|----------------|---|---|
| | | Date | Time | Date | Time | | | |
| Fish Tagged in 2001 | | | | | | | | |
| US 10 | 1 | 5 | 19-Sep-01 | | | 0.0 | Tagged and released at Ruby Crk (Washington) | |
| Fate 2002: Fish not detected on the Canadian side of the border. | | | | | | | | |
| US 12 | 1 | 3 | 27-Sep-01 | ? | | | 0.0 | Tagged and released at Lightning Crk (Washington) |
| | | | 18-Sep-02 | 22:30 | 19-Sep-02 | 20:36 | 1.0 | Passed station 1 upstream |
| | | | 26-Sep-02 | 3:20 | 03-Oct-02 | 6:41 | 1.0 | Passed station 1 downstream |
| | | | | | 03-Oct-02 | 11:00 | 0.0 | Mobile track |
| | | | 03-Oct-02 | 21:59 | 03-Oct-02 | 23:24 | 1.0 | Passed station 1 upstream |
| | | | | 12-Oct-02 | 13:00 | 3.7 | Boat track (no visual by swimmers; channel split and not surveyed, too many log jams) | |
| Fate 2002: Fish passed upstream to the spawning grounds on 3-Oct and was last detected on the 12-Oct at 3.7 km. Tag found by floaters at river jct | | | | | | | | |
| | | | | 22-Mar-03 | 12:00 | 3.7 | | |
| US 14 | 1 | 4 | 28-Sep-01 | ? | | 0.0 | Tagged and released at Big Beaver Crk (Washington) | |
| Fate 2002: Fish not detected on the Canadian side of the border. | | | | | | | | |
| US 17 | 1 | 7 | 28-Sep-01 | ? | | 0.0 | Tagged and released at Lightning Crk (Washington) | |
| Fate 2002: Fish not detected on the Canadian side of the border. | | | | | | | | |
| US 33 | 1 | 6 | 16-Oct-01 | ? | | | 0.0 | released at Beaver Creek (Washington) |
| | | | 01-May-02 | | 08-May-02 | | 1.0 | Detected at station 1 when channel 1 programme into station |
| | | | 18-May-02 | 22:48 | 19-May-02 | 5:05 | 1.0 | Passes station 1 heading upstream |
| | | | | | 05-Sep-02 | 8:58 | 8.0 | Mobile Track |
| | | | 11-Sep-02 | 0:32 | 11-Sep-02 | 19:56 | 18.1 | Passed station 8 upstream |
| | | | 12-Sep-02 | 22:05 | 12-Sep-02 | 22:24 | 18.1 | Passed station 8 downstream |
| | | | | | 14-Sep-02 | 12:30 | 17.5 | Boat track and visual from floater |
| | | | 28-Sep-02 | 1:28 | 28-Sep-02 | 2:27 | 18.1 | Passed station 8 upstream |
| | | | 29-Sep-02 | 22:30 | 30-Sep-02 | 20:44 | 18.1 | Detected upstream station 8 |
| | | | 01-Oct-02 | 6:33 | 01-Oct-02 | 19:31 | 18.1 | Passed station 8 downstream |
| 03-Oct-02 | 20:28 | 03-Oct-02 | 21:34 | 18.1 | Passed station 8 upstream | | | |
| Fate 2002: Fish passed upstream station 8 on the 3-Oct to spawn in the upper river. Fish had not kelted by the time the stations were removed on the 28-Nov. | | | | | | | | |

Appendix D. Summary of detections and migratory behavior for each radio-tagged char released in Washington in 2001 and 2002 that crossed the international border and ventured into the BC Skagit River in 2003

| Fish No. | Channel Code | First detected | | Last detected | | Location (rkm) | Comments / Fate | |
|--|--------------|----------------|-----------|---------------|-----------|------------------|---|---|
| | | Date | Time | Date | Time | | | |
| Fish tagged in 2002 | | | | | | | | |
| US 43 | 1 | 212 | 03-Oct-02 | | | | Tagged by Eric at Big Beaver Crl | |
| | | | | 18-Oct-02 | 14:30 | 0.0 | Boat track by Eric | |
| | | | | 25-Oct-02 | 14:30 | 0.0 | Boat track by Eric | |
| | | | | 30-Oct-02 | 14:30 | -1.0 | Boat track by Eric | |
| | | | | 13-Nov-02 | 11:16 | -1.0 | Boat track by Eric | |
| | | | | 22-Nov-02 | 14:04 | | North stumpfields west side by Eri | |
| Fate 2002: Fish was detected in Canadian waters during mobile tracks in late Oct and Nov. | | | | | | | | |
| | | | | 29-Jul-03 | 13:27 | Beaver Crk Basin | Eric boat track at Big Beaver Crk Basin | |
| | | | 27-Aug-03 | 23:02 | 28-Aug-03 | 22:51 | 1.0 | Passed station 1 upstream |
| | | | | | 16-Sep-03 | 13:01 | 4.2 | Boat track (visual by floaters |
| | | | 17-Sep-03 | 2:20 | 17-Sep-03 | 2:22 | 1.0 | Passed station 1 downstream |
| | | | 07-Oct-03 | 20:46 | 07-Oct-03 | 21:13 | 1.0 | Passed station 1 upstream |
| | | | 10-Oct-03 | 21:55 | 10-Oct-03 | 23:32 | 18.0 | Passed station 8 upstream |
| | | | 11-Oct-03 | 19:09 | 11-Oct-03 | 20:08 | 18.0 | Passed station 8 downstream |
| | | | | | 15-Oct-03 | 13:27 | 14.0 | Truck track at Shawaturr |
| | | | 18-Oct-03 | 16:03 | 19-Oct-03 | 6:31 | 18.0 | Passed station 8 upstream |
| | | | 24-Oct-03 | 10:25 | 24-Oct-03 | 10:39 | 18.0 | Passed station 8 downstream |
| | | | 30-Oct-03 | 22:27 | 30-Oct-03 | 22:35 | 1.0 | Passed station 1 downstreamKELT |
| Fate 2003: Fish moved into the river on 28-Aug and then dropped back on the 17-Sept to return again on 7-Oct. It kelted on 30 Oct. It is suspected to have spawned downstream 18 km during the week of 26-Oct. | | | | | | | | |
| US 40 | 1 | 211 | | | | | | |
| | | | | | 16-Sep-03 | 11:44 | Beaver Crk Mouth | Eric boat track (Little Beaver Crk Mouth |
| | | | | | 15-Oct-03 | 14:51 | -1.0 | Truck track at Mouth |
| | | | | | 20-Oct-03 | 11:01 | -0.3 | Truck track |
| | | | 27-Oct-03 | 4:09 | 27-Oct-03 | 5:43 | 1.0 | Passed station 1 upstream |
| | | | 31-Oct-03 | 21:17 | 31-Oct-03 | 21:29 | 1.0 | Passed station 1 downstreamKELT |
| Fate 2003: Fish moved into the river on 27-Oct and kelted on 31-Oct. It spawned during the week of 26-Oct u/s 1.0 km. | | | | | | | | |
| US 55 | 5 | 70 | | | | | | |
| | | | 07-Sep-03 | 21:32 | 07-Sep-03 | 22:04 | 1.0 | Passed station 1 upstream |
| | | | | | 16-Sep-03 | 13:01 | 4.2 | Boat track (visual by floaters |
| | | | 17-Sep-03 | 2:49 | 17-Sep-03 | 2:51 | 1.0 | Passed station 1 downstream |
| | | | | | 09-Oct-03 | 16:00 | -1.0 | Truck track (mouth) |
| | | | 12-Oct-03 | 23:50 | 13-Oct-03 | 0:30 | 1.0 | Passed station 1 upstream |
| | | | 15-Oct-03 | 5:05 | 15-Oct-03 | 6:43 | 18.0 | Passed station 8 upstream |
| | | | 19-Oct-03 | 16:12 | 20-Oct-03 | 11:51 | 32.5 | Detected downstream station ! |
| | | | | | 24-Oct-03 | 9:32 | 24.8 | Mobile track |
| | | | 24-Oct-03 | 21:50 | 25-Oct-03 | 12:16 | 18.0 | Detected upstream station { |
| | | | 28-Oct-03 | 4:22 | 28-Oct-03 | 4:29 | 18.0 | Passed station 8 downstream |
| | | | 28-Oct-03 | 7:27 | 28-Oct-03 | 7:28 | 1.0 | Passed station 1 downstreamKELT |
| Fate 2003: Moved into the river on 7-Sept, dropped back on 17-Sept. It moved back into the river on 13-Oct. It moved into the upper river and then dropped back to spawn u/s 18 km during the week of 26-Oct . It kelted on 28-Oct. | | | | | | | | |
| US 48 | 5 | 73 | | | | | | |
| | | | 18-Sep-03 | 22:53 | 19-Sep-03 | 6:01 | 1.0 | Passed station 1 upstream |
| | | | 08-Oct-03 | 21:02 | 09-Oct-03 | 6:34 | 1.0 | Detected downstream station 1 (passed updetected) |
| | | | | | 09-Oct-03 | 15:23 | 0.1 | Boat track (missed by floaters |
| | | | 09-Oct-03 | 19:52 | 09-Oct-03 | 20:11 | 1.0 | Passed station 1 upstream |
| | | | 12-Oct-03 | 5:08 | 12-Oct-03 | 6:25 | 18.0 | Passed station 8 upstream |
| | | | 20-Oct-03 | 1:42 | 23-Oct-03 | 9:59 | 32.5 | Detected downstream station ! |
| | | | | | 24-Oct-03 | 8:08 | 30.5 | Mobile track |
| | | | 28-Oct-03 | 10:36 | 30-Oct-03 | 2:12 | 32.5 | Detected downstream station ! |
| | | | 31-Oct-03 | 1:39 | 31-Oct-03 | 3:53 | 32.5 | Detected downstream station ! |
| | | | 03-Nov-03 | 0:46 | 03-Nov-03 | 1:23 | 18.0 | Passed station 8 downstream |
| | | | 03-Nov-03 | 5:13 | 03-Nov-03 | 5:17 | 1.0 | Passed station 1 downstreamKELT |
| Fate 2003: Fish moved into the river on 19-Sep. It moved into the upper river on 23-Oct. It spawned downstream 32.5 km during the week of 26-Oct and kelted on 3-Nov. | | | | | | | | |

Appendix E

| | |
|-------------|---|
| Appendix E1 | Skagit River swim count data: 6 March 2003 |
| Appendix E2 | Skagit River swim count data: 21 March 2003 |
| Appendix E3 | Skagit River swim count data: 22 March 2003 |
| Appendix E4 | Skagit River swim count data: 29 March 2003 |



Appendix E1
Skagit River Swim Count
06-Mar-03

Floater CEJ Mussell
 Pier van Dishoeck

Start 9:32
Finish 10:50

Suspension Bridge (rkm 1.5) to US Border (rkm 0.0)

| BT/ DV | RB |
|--------|----|
| 3 | 9 |

The spawning rainbow population has not entered the river yet and either have the bull trout that seem to follow them up to the spawning grounds. We found 2 radio tags on the river bottom. (7-76 and 7-74).

Appendix E2
Skagit River Swim Count
21-Mar-03

Floaters CEJ Mussell
 Pier van Dishoeck

Water Temp 6.5C
Visibility reduced 3-4m

Start 9:30
Finish 12:30

Suspension Bridge (rkm 1.5) to below fishing boundary (rkm -0.4)

| | BT/ DV | RB |
|-------------------------|--------|----|
| Suspension to US Border | 5 | 3 |
| US Border to rkm - 0.4 | 6 | 0 |

Of the 6 fish observed at the -0.2km location we saw 1 spaghetti tag (5-14) and 1 brown anchor tag along with the other 4 fish (We caught 3 of these fish.

Three rainbow were caught by Jack and Steve and they were not observed by floaters (definitely missing fish)

Appendix E4
Skagit River Swim Count
 29-Mar-03

Floaters Pier van Dishoeck
 Terry Maniwa

Telemetry CEJ Mussell

Water Temp 6 deg C

Visibility 4.5m

Start/ Finish 9:00/ 12:00

Number of Char

| Date | Section | rkm | Seen (no visible tag) | Seen (pink - radio tagged) | Seen (white - spaghetti only) | Seen tag or antenna only) | Captured (radio tagged, released) | Captured (spaghetti only, released) | Captured (not tagged, released) | Recaptured (pink - radio tagged) | Recaptured (anchor or spaghetti only) | Detected (Number of Radio Tagged Fish) | Detected (Radio Tag Channel and Code) | Number of Rainbow Trout |
|---------------|---------------------------|--------------|-----------------------------|-------------------------------------|--|------------------------------------|--|--|---------------------------------------|--|---|---|--|-------------------------------|
| 29-Mar-03 | Swing Bridge to US Border | 1.5-0.8 | 3 | 1 | | | | | | | | 1 (7-41) | | 1 |
| | | 0.5 | 2 | | 1 | | 1 | | | 1 (retagged w-radio) | | | | 6 |
| | | 0.3 | 1 | | | | 1 | | | | | | | 0 |
| | | 0.1 | 3 | | 1 | | | | | | | | | 5 |
| | | -0.2 | 3 | 1 | | | 1 (captured) | | | 1 | | 1 (5-14) | | 1 |
| | | -0.3 | 0 | | | | 2 (captured) | | | | | | | 0 |
| | | -0.3 to -1.0 | 0 | | | | | | | | | | | 1 |
| TOTALS | | | 12 | 2 | 2 | | 4 | | | 1 | 1 | 2 | | 14 |

Notes: There seemed to be a lot more fish in the river than the floaters were able to see in the high water and limited visibility. Jack Mussell caught in the range on 30 rainbow trout in the lower river before the floaters went through. Based on the number of rainbows they missed, they probably also missed a number of char. Based on this, there is definitely a big increase in the number of fish in the river in the last week.

Appendix F

| | |
|-------------|--|
| Appendix F1 | Skagit River swim count data: 21 July 2003 |
| Appendix F2 | Skagit River swim count data: 22 July 2003 |
| Appendix F3 | Skagit River swim count data: 23 July 2003 |



Appendix F1
 SKAGIT CHAR POPULATION ASSESSMENT JULY 2003
 SWIM COUNTS/TELEMETRY SURVEY DATA ENTRY

Date: July 21, 2003

Snorkle Crew: CEJ Mussell and Pier van Dishoeck

Raft and Telemetry Crew: Jack Mussell and Iain Lunn

Location: 26 Mile Bridge to 0 km Campsite

Weather: Clear and Sunny

Water Level: 14.5 inches at Suspension Bridge

Visibility: 4-5m

Water Temperature: 9 degC at 26 Mile Bridge

| Survey No. | Date | Time | Location | River | | | Unique Fish "Group" No. | Number of Rainbow Trout | No. Non Tagged Char Observed (Swim Crew) | Number of Tagged Char Observed (Swim Crew) | | | | Radio Tags Detected / Fish Data | | Comments |
|------------|-----------|-------|----------------|-------|--------|---------|-------------------------|-------------------------|--|--|-------|------|--------------|--|---------|--|
| | | | | Km | UTM1 | UTM2 | | | | Pink (with working) | White | Floy | Antenna Only | Radio tagged char with spaghetti tag that could be | Channel | |
| 1 | 21-Jul-03 | 9:27 | 26 Mile Bridge | 18 | | | 1 | 4 | | | | | | | | started float |
| 1 | 21-Jul-03 | 9:36 | | | | | 2 | 18 | | | | | | | | |
| 1 | 21-Jul-03 | 9:37 | | | | | 3 | 1 | | | | | | | | |
| 1 | 21-Jul-03 | 9:39 | | | | | 4 | 1 | | | | | | | | |
| 1 | 21-Jul-03 | 9:40 | | | 634057 | 5441812 | 5 | 3 | 1 | | | | | | | |
| 1 | 21-Jul-03 | 9:42 | | | | | 6 | 1 | | | | | | | | |
| 1 | 21-Jul-03 | 9:45 | | | | | 7 | 1 | | | | | | | | |
| 1 | 21-Jul-03 | 9:48 | Crk Confluence | | 634208 | 5441523 | 8 | 13 | | | | | | | | Crk Confluence west side |
| 1 | 21-Jul-03 | 9:50 | | | | | 9 | 3 | | | | | | | | |
| 1 | 21-Jul-03 | 9:52 | | 17 | 634387 | 5441323 | 10 | 11 | | 1 | | | | 1 | 5 | 21 Visibility reduced to 4m after confluence |
| 1 | 21-Jul-03 | | | 17 | | | | | | 1 | | | | 1 | 7 | 76 |
| 1 | 21-Jul-03 | 10:01 | | | | | 11 | 10 | | | | | | | | |
| 1 | 21-Jul-03 | 10:08 | | | | | 12 | 12 | 2 | | | | | | | |
| 1 | 21-Jul-03 | 10:09 | | | | | 13 | 4 | | | | | | | | |
| 1 | 21-Jul-03 | 10:13 | | | | | 14 | 13 | | | | | | | | |
| 1 | 21-Jul-03 | 10:16 | | | | | 15 | 3 | | | | | | | | |
| 1 | 21-Jul-03 | 10:19 | | | | | 16 | 1 | | | | | | | | |
| 1 | 21-Jul-03 | 10:21 | | | | | 17 | 5 | | | | | | | | |
| 1 | 21-Jul-03 | 10:23 | | 15.7 | 635604 | 5440962 | 18 | | | 1 | | | | 1 | 5 | 14 |
| 1 | 21-Jul-03 | 10:25 | | 15.5 | 635668 | 5440803 | 19 | | | 1 | | | | 1 | 7 | 39 |
| 1 | 21-Jul-03 | 10:26 | | | | | 20 | 16 | | | | | | | | |
| 1 | 21-Jul-03 | 10:30 | | | | | 21 | 5 | | | | | | | | |
| 1 | 21-Jul-03 | 10:31 | | | | | 22 | 20 | | | | | | | | |
| 1 | 21-Jul-03 | 10:33 | | | 635865 | 5440578 | | | | | | | | | | |
| 1 | 21-Jul-03 | 10:35 | | | | | 23 | 15 | | | | | | | | |
| 1 | 21-Jul-03 | 10:37 | | 14.9 | 635846 | 5440344 | 24 | 21 | | | | | | 1 | 5 | 34 Not seen by floaters |
| 1 | 21-Jul-03 | 10:41 | | | | | 25 | 11 | | | | | | | | |
| 1 | 21-Jul-03 | 10:43 | | | | | 26 | 6 | | | | | | | | |
| 1 | 21-Jul-03 | 10:45 | | | | | 27 | 6 | | | | | | | | |
| 1 | 21-Jul-03 | 10:46 | | 14.6 | 636048 | 5439908 | | | | | | | | | | 5-58 is just a tag floating downstream |
| 1 | 21-Jul-03 | 10:47 | | | | | 28 | 23 | 2 | | | | | | | |
| 1 | 21-Jul-03 | 10:49 | | | | | 29 | 12 | | | | | | | | |
| 1 | 21-Jul-03 | 10:52 | | | 636702 | 5439008 | 30 | 18 | 1 | | | | | | | |
| 1 | 21-Jul-03 | 10:56 | | | | | 31 | 8 | | | | | | | | |
| 1 | 21-Jul-03 | 11:00 | | | | | 32 | 14 | | | | | | | | |
| 1 | 21-Jul-03 | 11:09 | | | 636702 | 5439008 | 33 | 55 | 3 | | | | | | | Took a break |
| 1 | 21-Jul-03 | 11:39 | | | | | | | | | | | | | | Started again |

Appendix F1
 SKAGIT CHAR POPULATION ASSESSMENT JULY 2003
 SWIM COUNTS/TELEMETRY SURVEY DATA ENTRY

Date: July 21, 2003

Snorkle Crew: CEJ Mussell and Pier van Dishoeck
 Raft and Telemetry Crew: Jack Mussell and Iain Lunn
 Location: 26 Mile Bridge to 0 km Campsite
 Weather: Clear and Sunny
 Water Level: 14.5 inches at Suspension Bridge
 Visibility: 4-5m
 Water Temperature: 9 degC at 26 Mile Bridge

| Survey | | | River | | | | Unique | Number of | No. Non | Number of Tagged Char Observed | | | | Radio Tags | | Comments | |
|--------|-----------|-------|-----------|------|--------|---------|--------------|-----------|----------------------|--|-------|------|----------------------|--|---------|----------|--|
| No. | Date | Time | Location | Km | UTM1 | UTM2 | Fish "Group" | Rainbow | Observed (Swim Crew) | Number of Tagged Char Observed (Swim Crew) | | | Detected / Fish Data | | | | |
| | | | | | | | No. | Trout | | Pink (with working) | White | Floy | Antenna Only | Radio tagged char with spaghetti tag that could be | Channel | Code | |
| 1 | 21-Jul-03 | 11:45 | | | | | | 34 | 24 | | | | | | | | |
| 1 | 21-Jul-03 | 11:48 | | | | | | 35 | 22 | | | | | | | | |
| 1 | 21-Jul-03 | 11:53 | | | | | | 36 | 5 | | | | | | | | |
| 1 | 21-Jul-03 | 11:56 | | | | | | 37 | 15 | | | | | | | | |
| 1 | 21-Jul-03 | 11:58 | | | | | | 38 | 4 | | | | | | | | |
| 1 | 21-Jul-03 | 12:01 | | | | | | 39 | 16 | | | | | | | | |
| 1 | 21-Jul-03 | 12:03 | | 11.6 | 637485 | 5438251 | | 40 | 14 | 3 | | | | | | | |
| 1 | 21-Jul-03 | 12:15 | Log Jam | 11.5 | 637499 | 5433175 | | 41 | 5 | | | | 1 | | 7 | 42 | No detection but could see pink tag. Fish was |
| 1 | 21-Jul-03 | 12:19 | | | | | | 42 | 3 | 1 | | | | | | | Fish was seen by floaters and should have had |
| 1 | 21-Jul-03 | 12:20 | | | | | | 43 | 9 | 1 | | | | | | | |
| 1 | 21-Jul-03 | 12:34 | | | | | | 44 | 8 | | | | | | | | |
| 1 | 21-Jul-03 | 12:35 | | | | | | 45 | 4 | | | | | | | | |
| 1 | 21-Jul-03 | 12:40 | | | | | | 46 | 27 | | | | | | | | |
| 1 | 21-Jul-03 | 12:43 | | | | | | 47 | 1 | | | | | | | | |
| 1 | 21-Jul-03 | 12:48 | | | | | | 48 | 16 | | | | | | | | |
| 1 | 21-Jul-03 | 12:49 | | | | | | | | | | | | | | | |
| 1 | 21-Jul-03 | 12:51 | | | 637836 | 5437522 | | 49 | 17 | 1 | | | | | | | |
| 1 | 21-Jul-03 | 12:53 | | | | | | 50 | 3 | | | | | | | | |
| 1 | 21-Jul-03 | 12:55 | | | | | | 51 | 16 | | | | | | | | |
| 1 | 21-Jul-03 | 12:59 | | | | | | 52 | 3 | | | | | | | | |
| 1 | 21-Jul-03 | 13:02 | | | | | | 53 | 2 | | | | | | | | |
| 1 | 21-Jul-03 | 13:04 | | | 637727 | 5436844 | | 54 | 5 | 1 | | | | | | | |
| 1 | 21-Jul-03 | 13:09 | | | | | | 55 | 11 | | | | | | | | |
| 1 | 21-Jul-03 | 13:11 | | | 637524 | 5436584 | | | | | | | | | | | |
| 1 | 21-Jul-03 | 13:15 | | | 637544 | 5436456 | | 56 | 35 | 2 | | | | | | | |
| 1 | 21-Jul-03 | 13:18 | | | | | | 57 | 21 | | | | | | | | |
| 1 | 21-Jul-03 | 13:24 | | 9.2 | 637756 | 5436145 | | 58 | 45 | 2 | | | | | | | No detection but could see antenna and pink ta |
| 1 | 21-Jul-03 | 13:32 | | 9 | 637901 | 5435958 | | 59 | 42 | 4 | 1 | | | 1 | 7 | 77 | |
| 1 | 21-Jul-03 | 13:35 | | | | | | 60 | 5 | | | | | | | | |
| 1 | 21-Jul-03 | 13:38 | | 8.8 | 638972 | 5436023 | | 61 | 15 | 2 | 1 | | | 1 | 5 | 15 | Took a break |
| 1 | 21-Jul-03 | 13:59 | High Bank | 8.7 | | | | | | | | | | | | | Restart |
| 1 | 21-Jul-03 | 14:02 | | | | | | 62 | 12 | | | | | | | | |
| 1 | 21-Jul-03 | 14:04 | | | | | | 63 | 3 | | | | | | | | |
| 1 | 21-Jul-03 | 14:08 | | | | | | 64 | 9 | | | | | | | | |
| 1 | 21-Jul-03 | 14:12 | | | | | | 65 | 6 | | | | | | | | |
| 1 | 21-Jul-03 | 14:15 | | | | | | 66 | 4 | | | | | | | | |
| 1 | 21-Jul-03 | 14:19 | | | 638222 | 5435000 | | 67 | 32 | 1 | | | | | | | |

Appendix F1
 SKAGIT CHAR POPULATION ASSESSMENT JULY 2003
 SWIM COUNTS/TELEMETRY SURVEY DATA ENTRY

Date: July 21, 2003

Snorkle Crew: CEJ Mussell and Pier van Dishoeck

Raft and Telemetry Crew: Jack Mussell and Iain Lunn

Location: 26 Mile Bridge to 0 km Campsite

Weather: Clear and Sunny

Water Level: 14.5 inches at Suspension Bridge

Visibility: 4-5m

Water Temperature: 9 degC at 26 Mile Bridge

| Survey | | | River | | | | Unique | Number of | No. Non | Number of Tagged Char Observed | | | | Radio Tags | | | Comments |
|--------|-----------|-------|----------|-----|--------|---------|--------------|-----------|----------------------|--|-------|------|----------------------|--|---------|------|--|
| No. | Date | Time | Location | Km | UTM1 | UTM2 | Fish "Group" | Rainbow | Observed (Swim Crew) | Number of Tagged Char Observed (Swim Crew) | | | Detected / Fish Data | | | | |
| | | | | | | | No. | Trout | | Pink (with working) | White | Floy | Antenna Only | Radio tagged char with spaghetti tag that could be | Channel | Code | |
| 1 | 21-Jul-03 | 14:22 | | | | | 68 | 5 | | | | | | | | | |
| 1 | 21-Jul-03 | 14:24 | | | | | 69 | 3 | | | | | | | | | |
| 1 | 21-Jul-03 | 14:26 | | | | | 70 | 4 | | | | | | | | | |
| 1 | 21-Jul-03 | 14:31 | | 7.2 | 638636 | 5434618 | 71 | 45 | 1 | | | | | 1 | 7 | 38 | Not seen by floaters |
| 1 | 21-Jul-03 | 14:35 | | | | | 72 | 17 | | | | | | | | | |
| 1 | 21-Jul-03 | 14:39 | | 6.7 | 638771 | 5434172 | 73 | 12 | 1 | 1 | | | | 1 | 5 | 23 | |
| 1 | 21-Jul-03 | 14:41 | | | | 638838 | 5434160 | 74 | 43 | 1 | | | | | | | |
| 1 | 21-Jul-03 | 14:44 | | | | | 75 | 4 | | | | | | | | | |
| 1 | 21-Jul-03 | 14:48 | | | | 639180 | 5434099 | 76 | 18 | 1 | | | | | | | |
| 1 | 21-Jul-03 | 14:50 | | | | | 77 | 1 | | | | | | | | | |
| 1 | 21-Jul-03 | 14:56 | | 5.9 | 639485 | 5433935 | 78 | 44 | | 1 | | | | 1 | 5 | 31 | |
| 1 | 21-Jul-03 | 15:00 | | | | | 79 | 5 | | | | | | | | | |
| 1 | 21-Jul-03 | 15:02 | | | | 639334 | 5433700 | 80 | 24 | 2 | | | | | | | |
| 1 | 21-Jul-03 | 15:06 | | | | | 81 | 10 | | | | | | | | | |
| 1 | 21-Jul-03 | 15:13 | | | | 639272 | 5433387 | 82 | 25 | 4 | | | | | | | |
| 1 | 21-Jul-03 | 15:16 | | | | | 83 | 24 | | | | | | | | | |
| 1 | 21-Jul-03 | 15:19 | | | | 639555 | 5433385 | 84 | 18 | 1 | | | | | | | |
| 1 | 21-Jul-03 | 15:23 | | | | | 85 | 15 | | | | | | | | | |
| 1 | 21-Jul-03 | 15:28 | | | | 639672 | 5433082 | 86 | 45 | 5 | | | | | | | |
| 1 | 21-Jul-03 | 15:32 | | | | | 87 | 21 | | | | | | | | | |
| 1 | 21-Jul-03 | 15:36 | | | | | 88 | 15 | | | | | | | | | |
| 1 | 21-Jul-03 | 15:38 | | | | | 89 | 5 | | | | | | | | | |
| 1 | 21-Jul-03 | 15:41 | | | | 640322 | 5432683 | 90 | 6 | 3 | | | | | | | |
| 1 | 21-Jul-03 | 15:45 | | | | | 91 | 16 | | | | | | | | | |
| 1 | 21-Jul-03 | 15:47 | | | | | 92 | 10 | | | | | | | | | |
| 1 | 21-Jul-03 | 15:49 | | | | 640429 | 5432871 | 93 | 7 | 1 | | | | | | | |
| 1 | 21-Jul-03 | 15:55 | | | | | 94 | 7 | | | | | | | | | |
| 1 | 21-Jul-03 | 16:00 | | 3.6 | 640774 | 5432713 | 95 | 15 | 11 | | | | | | 7 | 72 | Not seen by floaters but this fish is an antenna |
| 1 | 21-Jul-03 | 16:01 | | | | | 96 | 6 | | | | | | | | | |
| 1 | 21-Jul-03 | 16:06 | | 3.2 | 641358 | 5432633 | 97 | 29 | 2 | 1 | | | | 1 | 5 | 30 | |
| 1 | 21-Jul-03 | 16:11 | | | | | 98 | 14 | | | | | | | | | |
| 1 | 21-Jul-03 | 16:14 | | | | | 99 | 20 | | | | | | | | | |
| 1 | 21-Jul-03 | 16:19 | | 2.5 | 641358 | 5431950 | 100 | 105 | 5 | 1 | | | | 1 | 7 | 35 | This is also fish 5-51 (OLD DOUBLE TAG) |
| 1 | 21-Jul-03 | | | 2.5 | | | | | | 1 | | | | 1 | 7 | 34 | |
| 1 | 21-Jul-03 | 16:22 | | | | | 101 | 3 | | | | | | | | | |
| 1 | 21-Jul-03 | 16:23 | | | | 641629 | 5431858 | 102 | 5 | 1 | | | | | | | |
| 1 | 21-Jul-03 | 16:27 | | | | 641742 | 5431674 | 103 | 16 | 3 | | | | | | | |

Appendix F1
 SKAGIT CHAR POPULATION ASSESSMENT JULY 2003
 SWIM COUNTS/TELEMETRY SURVEY DATA ENTRY

Date: July 21, 2003

Snorkle Crew: CEJ Mussell and Pier van Dishoeck

Raft and Telemetry Crew: Jack Mussell and Iain Lunn

Location: 26 Mile Bridge to 0 km Campsite

Weather: Clear and Sunny

Water Level: 14.5 inches at Suspension Bridge

Visibility: 4-5m

Water Temperature: 9 degC at 26 Mile Bridge

| Survey | | | River | | Unique Fish "Group" | | Number of Rainbow Trout | | No. Non Tagged Char | Number of Tagged Char Observed (Swim Crew) | | | | Radio Tags Detected / Fish Data | | Comments | |
|---------------|-----------|-------|---------------|------|---------------------|---------|-------------------------|-------------|----------------------|--|----------|----------|--------------|--|-----------|----------|---|
| No. | Date | Time | Location | Km | UTM1 | UTM2 | No. | Trout | Observed (Swim Crew) | Pink (with working) | White | Floy | Antenna Only | Radio tagged char with spaghetti tag that could be | Channel | | Code |
| 1 | 21-Jul-03 | 16:32 | | | 641872 | 5431413 | 104 | 73 | 4 | | | | | | | | |
| 1 | 21-Jul-03 | 16:36 | | | | | 105 | 5 | | | | | | | | | |
| 1 | 21-Jul-03 | 16:37 | Swing Bridge | 1.5 | | | | | | | | | | | | | Swing Bridge |
| 1 | 21-Jul-03 | 16:38 | Start of Lake | 1 | | | 106 | 4 | | | | | | | | | Lake is back flooded to here. |
| 1 | 21-Jul-03 | 16:41 | | | | | | | | | | | | | | | Snack Break |
| 1 | 21-Jul-03 | 16:53 | | | | | | | | | | | | | | | Restart |
| 1 | 21-Jul-03 | 16:58 | | | 641766 | 5430913 | 107 | 32 | 1 | | | | | | | | |
| 1 | 21-Jul-03 | 17:02 | | 0.9 | 641719 | 5430860 | 108 | 7 | | | | | | 1 | 5 | | 35 Not seen by floaters |
| 1 | 21-Jul-03 | 17:06 | | | | | 109 | 50 | | | | | | | | | |
| 1 | 21-Jul-03 | 17:25 | | -0.1 | 641779 | 5429893 | 110 | 20 | 4 | | | | | | 5 | | 10 Detected but could not have been seen by float |
| 1 | 21-Jul-03 | 17:26 | Campsite | -0.3 | | | | | | | | | | | | | |
| Totals | | | | | | | | 1646 | 78 | 11 | 0 | 0 | 1 | 14 | 17 | | |

| | |
|---|-------|
| Total Radio tag char with spaghetti tag seen | 11 |
| Total Radio tagged char with spaghetti tag detected | 14 |
| Observer Efficiency | 0.786 |
| Expansion Factor | 1.273 |
| Total Char Count | 90 |
| Expanded Char Estimate | 115 |
| Total Rainbow Count | 1646 |
| Expanded Rainbow Estimate | 2095 |

Appendix F2
 SKAGIT CHAR POPULATION ASSESSMENT JULY 2003
 SWIM COUNTS/TELEMETRY SURVEY DATA ENTRY

Date: 22 July 2003

Snorkle Crew: CEJ Mussell and Pier van Dishoeck

Raft and Telemetry Crew: Jack Mussell and Jim Rissing

Location: Sumallo Grove (32.5 km) to 26 Mile Bridge (18 km)

Weather: Clear and Sunny

Visibility: 4-5m

Water Temperature: 11 degC on Sumallo at Grove and 9 degC on Skagit at Confluence

| Survey | River | Unique Fish "Group" | Number of Rainbow Trout | No. Non Tagged Char Observed | Number of Tagged Char Observed (Swim Crew) | | | Radio Tags Detected / Fish Data | | Comments | | | | | | | |
|--------|-----------|---------------------|-------------------------|------------------------------|--|---------|------|---------------------------------|--|----------|---------|------|---|---|----|--|--|
| | | | | | Pink (with working radio tag) | White | Floy | Antenna Only | Radio tagged char with spaghetti tag that could be observed by floater | | Channel | Code | | | | | |
| No. | Date | Time | Location | Km | UTM1 | UTM2 | No. | Trout | (Swim Crew) | | | | | | | | |
| 1 | 22-Jul-03 | 8:25 | 1st Pool up Sumallo | 0.1S | 639925 | 5452283 | | | | | | | | | | | |
| 1 | 22-Jul-03 | 8:40 | Confluence of Sumallo | | 639916 | 5452112 | 1 | 9 | | | | | | | | | |
| 1 | 22-Jul-03 | 8:46 | | | | | 2 | 2 | | | | | | | | | |
| 1 | 22-Jul-03 | 8:53 | | | 6400763 | 5451420 | 3 | 14 | 1 | | | | | | | | |
| 1 | 22-Jul-03 | 8:56 | | | | | 4 | 1 | | | | | | | | | |
| 1 | 22-Jul-03 | 8:59 | | | | | 5 | 9 | | | | | | | | | |
| 1 | 22-Jul-03 | 9:01 | | 31.2 | 640018 | 5451102 | 6 | 12 | | 1 | | | 1 | 5 | 33 | | |
| 1 | 22-Jul-03 | 9:03 | | | | | 7 | 6 | | | | | | | | | |
| 1 | 22-Jul-03 | 9:07 | | | | | 8 | 14 | | | | | | | | | |
| 1 | 22-Jul-03 | 9:10 | | | | | 9 | 4 | | | | | | | | | 7-78 at this location - could not be recovered |
| 1 | 22-Jul-03 | 9:13 | | | 640039 | 5450721 | 10 | 12 | 1 | | | | | | | | |
| 1 | 22-Jul-03 | 9:23 | | | | | 11 | 1 | | | | | | | | | |
| 1 | 22-Jul-03 | 9:37 | | | 637838 | 5450473 | 12 | 2 | 1 | | | | | | | | |
| 1 | 22-Jul-03 | 9:42 | | | | | 13 | 2 | | | | | | | | | |
| 1 | 22-Jul-03 | 9:44 | | | | | 14 | 5 | | | | | | | | | |
| 1 | 22-Jul-03 | 9:49 | | | | | 15 | 4 | | | | | | | | | |
| 1 | 22-Jul-03 | 9:51 | | | | | 16 | 4 | | | | | | | | | |
| 1 | 22-Jul-03 | 9:56 | | | | | 17 | 3 | | | | | | | | | |
| 1 | 22-Jul-03 | 9:58 | | | 639598 | 5449629 | 18 | 3 | 1 | | | | | | | | |
| 1 | 22-Jul-03 | 10:08 | | | 639280 | 5445987 | 19 | 12 | 1 | | | | | | | | |
| 1 | 22-Jul-03 | 10:18 | | | 639197 | 5449401 | 20 | 7 | 1 | | | | | | | | |
| 1 | 22-Jul-03 | 10:25 | | | | | 21 | 1 | | | | | | | | | |
| 1 | 22-Jul-03 | 10:28 | | | | | 22 | 5 | | | | | | | | | |
| 1 | 22-Jul-03 | 10:33 | | | 639172 | 5449065 | 23 | 4 | 2 | | | | | | | | |
| 1 | 22-Jul-03 | 10:37 | | | | | 24 | 8 | | | | | | | | | |
| 1 | 22-Jul-03 | 10:39 | | 28.2 | 638970 | 5448947 | 25 | 8 | 2 | 1 | | | 1 | 7 | 74 | | |
| 1 | 22-Jul-03 | 10:42 | Trib east | | 638914 | 5448909 | | | | | | | | | | | |
| 1 | 22-Jul-03 | 10:54 | | | 638646 | 5448658 | 26 | 15 | 3 | | | | | | | | |
| 1 | 22-Jul-03 | 11:44 | | | | | 27 | 9 | | | | | | | | | |
| 1 | 22-Jul-03 | 11:50 | | 27.2 | 638444 | 5448245 | 28 | 10 | 3 | 1 | | | 1 | 5 | 12 | | |
| 1 | 22-Jul-03 | 12:02 | | | | | 29 | 7 | | | | | | | | | |
| 1 | 22-Jul-03 | 12:05 | | | | | 30 | 7 | | | | | | | | | |
| 1 | 22-Jul-03 | 12:11 | | | | | 31 | 15 | | | | | | | | | |
| 1 | 22-Jul-03 | 12:15 | | | | | 32 | 11 | | | | | | | | | |
| 1 | 22-Jul-03 | 12:25 | | | 637555 | 5447655 | 33 | 11 | | | 1 | | | | | | |
| 1 | 22-Jul-03 | 12:30 | | | 637549 | 5447563 | 34 | 4 | 1 | | | | | | | | |
| 1 | 22-Jul-03 | 12:34 | | | 637552 | 5447433 | 35 | 6 | 1 | | | | | | | | |
| 1 | 22-Jul-03 | 12:37 | | | 637553 | 5447493 | 36 | | 1 | | | | | | | | |
| 1 | 22-Jul-03 | 12:43 | | | 637553 | 5447493 | 37 | 2 | 1 | | | | | | | | |
| 1 | 22-Jul-03 | 12:47 | | | | | 38 | 8 | | | | | | | | | |

Appendix F2
 SKAGIT CHAR POPULATION ASSESSMENT JULY 2003
 SWIM COUNTS/TELEMETRY SURVEY DATA ENTRY

Date: 22 July 2003

Snorkle Crew: CEJ Mussell and Pier van Dishoeck

Raft and Telemetry Crew: Jack Mussell and Jim Rissing

Location: Sumallo Grove (32.5 km) to 26 Mile Bridge (18 km)

Weather: Clear and Sunny

Visibility: 4-5m

Water Temperature: 11 degC on Sumallo at Grove and 9 degC on Skagit at Confluence

| Survey | River | Unique Fish "Group" | Number of Rainbow Trout | No. Non Tagged Char Observed | Number of Tagged Char Observed (Swim Crew) | | | | Radio Tags Detected / Fish Data | | | Comments | | | | | |
|--------|-----------|---------------------|-------------------------|------------------------------|--|-------------------------------|-------|-------|---------------------------------|--|---------|----------|--------------|--|---------|------|--|
| | | | | | Swim Crew | Pink (with working radio tag) | White | Floy | Antenna Only | Radio tagged char with spaghetti tag that could be observed by floater | Channel | | Code | | | | |
| No. | Date | Time | Location | Km | UTM1 | UTM2 | No. | Trout | (Swim Crew) | Pink (with working radio tag) | White | Floy | Antenna Only | Radio tagged char with spaghetti tag that could be observed by floater | Channel | Code | Comments |
| 1 | 22-Jul-03 | 12:50 | Log Jam | | 636922 | 5447120 | 39 | 1 | | | | | | | | | 5-22 at this location - could not be recovered |
| 1 | 22-Jul-03 | 12:54 | | | 636922 | 5447120 | 40 | 26 | 5 | | | | | | | | |
| 1 | 22-Jul-03 | 12:57 | | | | | 41 | 1 | | | | | | | | | |
| 1 | 22-Jul-03 | 13:01 | | | | | 42 | 12 | | | | | | | | | |
| 1 | 22-Jul-03 | 13:05 | | | 636767 | 5446848 | 43 | 3 | 1 | | | | | | | | |
| 1 | 22-Jul-03 | 13:06 | Trib West | | 636660 | 5446737 | | | | | | | | | | | |
| 1 | 22-Jul-03 | 13:07 | | | 636605 | 5446762 | 44 | | 1 | | | | | | | | |
| 1 | 22-Jul-03 | 13:12 | | | | | 45 | 4 | | | | | | | | | |
| 1 | 22-Jul-03 | 13:17 | | | 636392 | 5446551 | 46 | 8 | 1 | | | | | | | | |
| 1 | 22-Jul-03 | 13:20 | | | 636336 | 544653 | 47 | 4 | 1 | | | | | | | | |
| 1 | 22-Jul-03 | 13:25 | | | 636063 | 5446525 | 48 | 30 | 1 | | | | | | | | |
| 1 | 22-Jul-03 | 13:28 | | | | | 49 | 6 | | | | | | | | | |
| 1 | 22-Jul-03 | 13:30 | | | | | 50 | 4 | | | | | | | | | |
| 1 | 22-Jul-03 | 13:33 | Trib east | | 636029 | 5446244 | 51 | 8 | 1 | | | | | | | | |
| 1 | 22-Jul-03 | 13:37 | | | | | 52 | 8 | | | | | | | | | |
| 1 | 22-Jul-03 | 13:40 | | | 635760 | 5446179 | 53 | 8 | 2 | | | | | | | | |
| 1 | 22-Jul-03 | 13:43 | | | | | 54 | 15 | | | | | | | | | |
| 1 | 22-Jul-03 | 13:51 | | | | | 55 | 15 | | | | | | | | | |
| 1 | 22-Jul-03 | 14:33 | | 22.9 | 635464 | 5445737 | 56 | 4 | | | | | 1 | 5 | 52 | | This fish was seen but is an antenna-only. |
| | | 22-Jul-03 | | 22.9 | | | | | | | 1 | | | 1 | 5 | 18 | |
| 1 | 22-Jul-03 | 14:38 | | | | | 57 | 4 | | | | | | | | | |
| 1 | 22-Jul-03 | 14:40 | | | | | 58 | 5 | | | | | | | | | |
| 1 | 22-Jul-03 | 14:47 | | | 635331 | 5445561 | 59 | 17 | 1 | | | | | | | | |
| 1 | 22-Jul-03 | 14:50 | | | | | 60 | 4 | | | | | | | | | |
| 1 | 22-Jul-03 | 14:53 | | | | | 61 | 10 | 1 | | | | | | | | |
| 1 | 22-Jul-03 | 15:00 | | 22.8 | 635331 | 5445561 | 62 | 21 | 5 | 1 | | | | 1 | 5 | 38 | |
| 1 | 22-Jul-03 | 15:08 | | | | | 63 | 4 | | | | | | | | | |
| 1 | 22-Jul-03 | 15:12 | | | 634666 | 5445027 | 64 | 12 | 3 | | | | | | | | |
| 1 | 22-Jul-03 | 15:15 | | | | | 65 | 4 | | | | | | | | | |
| 1 | 22-Jul-03 | 15:18 | | | | | 66 | 7 | | | | | | | | | |
| 1 | 22-Jul-03 | 15:19 | | | | | 67 | 4 | | | | | | | | | |
| 1 | 22-Jul-03 | 15:35 | | 21.3 | 634462 | 5444734 | 68 | | | 1 | | | | 1 | 7 | 41 | |
| 1 | 22-Jul-03 | 15:40 | | | | | 69 | 8 | | | | | | | | | |
| 1 | 22-Jul-03 | 15:46 | | | | | 70 | 4 | | | | | | | | | |
| 1 | 22-Jul-03 | 16:00 | | | 634062 | 5444261 | 71 | 6 | 2 | | | | | | | | |
| 1 | 22-Jul-03 | 16:19 | | | | | 72 | 9 | | | | | | | | | |
| 1 | 22-Jul-03 | 16:24 | | | | | 73 | 12 | | | | | | | | | |
| 1 | 22-Jul-03 | 16:26 | | | 633804 | 5443873 | 74 | 16 | 1 | | | | | | | | |
| 1 | 22-Jul-03 | 16:32 | | | | | 75 | 8 | | | | | | | | | |
| 1 | 22-Jul-03 | 16:40 | | 19.5 | 633705 | 5443388 | 76 | 17 | 1 | | | | | 1 | 5 | 20 | Not seen by floaters |

Appendix F2
 SKAGIT CHAR POPULATION ASSESSMENT JULY 2003
 SWIM COUNTS/TELEMETRY SURVEY DATA ENTRY

Date: 22 July 2003

Snorkle Crew: CEJ Mussell and Pier van Dishoeck

Raft and Telemetry Crew: Jack Mussell and Jim Rissing

Location: Sumallo Grove (32.5 km) to 26 Mile Bridge (18 km)

Weather: Clear and Sunny

Visibility: 4-5m

Water Temperature: 11 degC on Sumallo at Grove and 9 degC on Skagit at Confluence

| Survey No. | Date | Time | Location | River | | Fish "Group" | Number of Rainbow Trout | No. Non Tagged Char Observed (Swim Crew) | Number of Tagged Char Observed (Swim Crew) | | | Radio Tags Detected / Fish Data | | Comments | | |
|---------------|-----------|-------|----------------|-------|--------|--------------|-------------------------|--|--|------|--------------|--|---------|----------|------|--|
| | | | | Km | | | | | White | Floy | Antenna Only | Radio tagged char with spaghetti tag that could be observed by floater | Channel | | Code | |
| 1 | 22-Jul-03 | 16:50 | | | 633571 | 5443082 | 77 | 13 | 1 | | | | | | | |
| 1 | 22-Jul-03 | 16:54 | | | | | 78 | 9 | | | | | | | | |
| 1 | 22-Jul-03 | 16:59 | | | 633459 | 5442679 | 79 | 17 | 1 | | | | | | | |
| 1 | 22-Jul-03 | 17:04 | | | | | 80 | 5 | | | | | | | | |
| 1 | 22-Jul-03 | 17:10 | | | 633665 | 5442490 | 81 | 19 | 1 | | | | | | | |
| 1 | 22-Jul-03 | 17:16 | | | | | 82 | 10 | | | | | | | | |
| 1 | 22-Jul-03 | 17:19 | | | | | 83 | 8 | | | | | | | | |
| 1 | 22-Jul-03 | 17:22 | | | | | 84 | 10 | | | | | | | | |
| 1 | 22-Jul-03 | 17:23 | | | | | 85 | 2 | | | | | | | | |
| 1 | 22-Jul-03 | 17:30 | 26 Mile Bridge | 18 | | | | | | | | | | | | |
| Totals | | | | | | | | 679 | 50 | 6 | 1 | 0 | 1 | 7 | 8 | |

| | |
|---|-------|
| Total Radio tag char with spaghetti tag seen | 6 |
| Total Radio tagged char with spaghetti tag detected | 7 |
| Observer Efficiency | 0.857 |
| Expansion Factor | 1.167 |
| Total Char Count | 58 |
| Expanded Char Estimate | 68 |
| Total Rainbow Count | 679 |
| Expanded Rainbow Estimate | 792 |

Appendix F3
 SKAGIT CHAR POPULATION ASSESSMENT JULY 2003
 SWIM COUNTS/TELEMETRY SURVEY DATA ENTRY

Date: 23 July 2003

Snorkle Crew: CEJ Mussell, Pier van Dishoeck

Telemetry Crew: Jack Mussell

Location: Sunshine Valley Bridge to Highway and 3.7 km Sumallo to 0.1 km Sumallo

Weather: Clear and Sunny

Visibility: 5m

Water Temperature: 10 degC on Sumallo at Bridge in Sunshine Valley

| Survey | River | Unique Fish "Group" | Number of Rainbow | No. Non Tagged Char Observed | Number of Tagged Char Observed (Swim Crew) | | | | | Radio Tags Detected / Fish Data | | Comments | | | | | | |
|--------|-----------|---------------------|-----------------------------------|------------------------------|--|-------------------------------|-------|-------|--------------|--|---------|----------|--------------|--|---------|------|--|--|
| | | | | | (Swim Crew) | Pink (with working radio tag) | White | Floy | Antenna Only | Radio tagged char with spaghetti tag that could be observed by floater | Channel | | Code | | | | | |
| No. | Date | Time | Location | Km | UTM1 | UTM2 | No. | Trout | (Swim Crew) | Pink (with working radio tag) | White | Floy | Antenna Only | Radio tagged char with spaghetti tag that could be observed by floater | Channel | Code | Comments | |
| 1 | 23-Jul-03 | 9:15 | Sunshine Valley Bridge | | | | | | | | | | | | | | | |
| 1 | 23-Jul-03 | 9:20 | Pocket Pools | | 628346 | 5458443 | 1 | 1 | 1 | | | | | | | | | |
| 1 | 23-Jul-03 | | Change in Habitat to low gradient | | 628399 | 5458747 | 2 | 19 | | | | | | | | | Good habitat for char and rainbows until flat. After that it is small substrate and little velocity. | |
| 1 | 23-Jul-03 | 11:15 | 1st Highway access | | 630246 | 5458318 | | | | | | | | | | | Manning Park 2 km to West Gate Sign. | |
| 1 | 23-Jul-03 | | | | | | | | | | | | | | | | | |
| 1 | 23-Jul-03 | 12:30 | Log Jam Pool | 3.7 S | 637559 | 5454618 | 3 | 2 | | | | | | 1 | 5 | | 37 Floaters did not see fish | |
| 1 | 23-Jul-03 | | | | | | 4 | 1 | | | | | | | | | | |
| 1 | 23-Jul-03 | | | | | | 5 | 1 | | | | | | | | | | |
| 1 | 23-Jul-03 | | | | | | 6 | | 1 | | | | | | | | | |
| 1 | 23-Jul-03 | | | | | | 7 | 2 | | | | | | | | | | |
| 1 | 23-Jul-03 | | | | | | 8 | 2 | | | | | | | | | | |
| 1 | 23-Jul-03 | | | | | | 9 | 3 | | | | | | | | | | |
| 1 | 23-Jul-03 | | | | | | 10 | 1 | | | | | | | | | | |
| 1 | 23-Jul-03 | | | | | | 11 | | 1 | | | | | | | | | |
| 1 | 23-Jul-03 | | | | | | 12 | 1 | | | | | | | | | | |
| 1 | 23-Jul-03 | | | | | | 13 | 1 | | | | | | | | | | |
| 1 | 23-Jul-03 | | | | | | 14 | 1 | | | | | | | | | | |
| 1 | 23-Jul-03 | 14:33 | upstream of Sumallo Mouth | 0.1 S | | | 15 | 1 | 3 | | | | | | | | | |
| Totals | | | | | | | | 36 | 6 | 0 | 0 | 0 | 0 | 1 | 1 | | | |

Total Radio tag char with spaghetti tag seen 0
 Total Radio tagged char with spaghetti tag detected 1
 Observer Efficiency 0.000
 Expansion Factor N/A
 Total Char Count 6
 Expanded Char Estimate N/A
 Total Rainbow Count 36
 Expanded Rainbow Estimate N/A

Appendix G

- Appendix G1 Skagit River swim count data: 14 Sept 2003
- Appendix G2 Skagit River swim count data: 15 Sept 2003
- Appendix G3 Skagit River swim count data: 16 Sept 2003



Appendix G1
 SKAGIT CHAR POPULATION ASSESSMENT SEPT 2003
 SWIM COUNTS/TELEMTRY SURVEY DATA ENTRY

Date: 14 Sept 2003

Snorkle Crew: CEJ Mussell and Pier van Dishoeck

Telemetry Crew: Jack Mussell and Sarah Nelson

Location: Sumallo Grove (32.5 km) to Campsite 41 at Silver Tip (20.2 km)

Weather: Overcast with showers and sunny breaks

Visibility: 5m+

Water Temperature: 6 degC on Sumallo at Grove and 5 degC on Skagit at Confluence

| Survey | River | Unique Fish "Group" | Number of Rainbow | No. Large Non Tagged Char (> 45 cm) Observed | No. Medium Non Tagged Char (< 45cm) Observed | Number of Tagged Char Observed (Swim Crew) | | | | Radio tagged char with spaghetti tag that could be observed by floater | Radio Tags Detected / Fish Data | | Comments | | | | | | | |
|---|-----------|---------------------|--------------------|--|--|--|-------|-------|--------------|--|---------------------------------|------|----------|---|---------------------------------------|---|---|---|-------|-----|
| | | | | | | Pink (with working radio tag) | White | Floy | Antenna Only | | Channel | Code | | | | | | | | |
| No. | Date | Time | Location | Km | UTM1 | UTM2 | No. | Trout | (Swim Crew) | (Swim Crew) | | | | | | | | | | |
| 2 | 14-Sep-03 | 9:20 | Sumallo Confluence | 32.5 | 639929 | 5452102 | | | | | | | | | | | | | | |
| 2 | 14-Sep-03 | 9:29 | | | | | 1 | 2 | | | | | | | | | | | | |
| 2 | 14-Sep-03 | 9:55 | | | 639977 | 5451846 | 2 | 5 | | 2 | | | | | Water Temp is 5 deg C | | | | | |
| 2 | 14-Sep-03 | 10:08 | | | 640122 | 5451106 | 3 | 11 | | | 2 | | | | | | | | | |
| 2 | 14-Sep-03 | 10:15 | | | | | 4 | 2 | | | | | | | | | | | | |
| 2 | 14-Sep-03 | 10:18 | | | 639970 | 5451010 | 5 | 7 | | | | | | | | | | | | |
| 2 | 14-Sep-03 | 10:25 | | 31.1 | 639938 | 5450974 | 6 | 1 | | 4 | | 1 | 7 | | 41 Visual by floaters | | | | | |
| 2 | 14-Sep-03 | 10:35 | | 31 | 640049 | 5450762 | 7 | 11 | | 1 | | | 7 | | 71 Missed by floaters (antenna only) | | | | | |
| 2 | 14-Sep-03 | 11:00 | | | | | 8 | 1 | | | | | | | | | | | | |
| 2 | 14-Sep-03 | 11:06 | | | | | 9 | 2 | | | | | | | | | | | | |
| 2 | 14-Sep-03 | 11:10 | | | | | 10 | 1 | | | | | | | Visibility decreased to 4.5m | | | | | |
| 2 | 14-Sep-03 | 11:14 | | | 639891 | 5450286 | 11 | 1 | | 2 | | | | | | | | | | |
| 2 | 14-Sep-03 | 11:17 | | | | | 12 | 2 | | | | | | | | | | | | |
| 2 | 14-Sep-03 | 11:44 | | | | | 13 | 25 | | | | | | | | | | | | |
| 2 | 14-Sep-03 | 11:50 | | | | | 14 | 5 | | | | | | | | | | | | |
| 2 | 14-Sep-03 | 11:57 | | | 639176 | 5449299 | 15 | 5 | | | | | | | Water temperature is 5.5 deg C | | | | | |
| 2 | 14-Sep-03 | 12:42 | | | | | 16 | 5 | | | | | | | | | | | | |
| 2 | 14-Sep-03 | 12:45 | | | | | 17 | 2 | | | | | | | | | | | | |
| 2 | 14-Sep-03 | 12:50 | | 28.4 | 639182 | 5448929 | 18 | | | | | | 1 | 7 | 74 Missed by floaters | | | | | |
| 2 | 14-Sep-03 | 13:09 | | | | | 19 | 7 | | 3 | | | | | | | | | | |
| 2 | 14-Sep-03 | 13:11 | | | | | 20 | 11 | | 3 | | | | | | | | | | |
| 2 | 14-Sep-03 | 13:36 | | | | | 21 | 24 | | 1 | | | | | | | | | | |
| 2 | 14-Sep-03 | 13:37 | | | 638429 | 5448291 | 22 | 6 | | 3 | | | | | | | | | | |
| 2 | 14-Sep-03 | 13:48 | | | | | 23 | 5 | | | | | | | | | | | | |
| 2 | 14-Sep-03 | 13:54 | | | | | 24 | 2 | | | | | | | | | | | | |
| 2 | 14-Sep-03 | 14:01 | | | | | 25 | 7 | | | | | | | | | | | | |
| 2 | 14-Sep-03 | 14:15 | | | 637907 | 5447845 | 26 | 7 | | 2 | | | | | | | | | | |
| 2 | 14-Sep-03 | 14:29 | | | | | 27 | 18 | | 3 | | | | | | | | | | |
| 2 | 14-Sep-03 | 15:17 | | 24.8 | 636773 | 5446835 | 28 | 39 | | 6 | | 1 | | 5 | 52 Visual of antenna only by floaters | | | | | |
| 2 | 14-Sep-03 | 16:40 | | | 636051 | 5446281 | 29 | 63 | | | | | | | | | | | | |
| 2 | 14-Sep-03 | 17:10 | | | 635471 | 5445676 | 30 | 53 | | | | | | | | | | | | |
| 2 | 14-Sep-03 | 17:30 | | | 635058 | 5445217 | 31 | 32 | | | | | | | | | | | | |
| 2 | 14-Sep-03 | 17:42 | | | | | 32 | 45 | | | 1 | | | | | | | | | |
| 2 | 14-Sep-03 | 18:24 | | 20.2 | 633730 | 5443986 | 33 | 22 | | | | | | | | | | | | |
| Totals | | | | | | | | 429 | | 30 | | 3 | 1 | 0 | 0 | 1 | 2 | 4 | | |
| Total Radio tag char with spaghetti tag seen | | | | | | | | | | | | | | | | | | | 1 | |
| Total Radio tagged char with spaghetti tag detected | | | | | | | | | | | | | | | | | | | 2 | |
| Observer Efficiency | | | | | | | | | | | | | | | | | | | 0.500 | |
| Expansion Factor | | | | | | | | | | | | | | | | | | | 2.000 | |
| Total Char Count | | | | | | | | | | | | | | | | | | | 35 | |
| Expanded Char Estimate | | | | | | | | | | | | | | | | | | | 70 | |
| Total Rainbow Count | | | | | | | | | | | | | | | | | | | | 429 |
| Expanded Rainbow Estimate | | | | | | | | | | | | | | | | | | | | 858 |

Appendix G2
 SKAGIT CHAR POPULATION ASSESSMENT SEPT 2003
 SWIM COUNTS/TELEMETRY SURVEY DATA ENTRY

Date: 15 Sept 2003

Snorkle Crew: CEJ Mussell and Pier van Dishoeck
 Telemetry Crew: Jack Mussell and Jim Rissling
 Location: Campsite 41 at Silver Tip (20.2 km) To High Bank (8.5km)
 Weather: Overcast with showers and sunny breaks
 Visibility: 5m+
 Water Temperature: 5 deg C at 26 Mile Bridge

| Survey | River | Fish "Group" | Number of Rainbow | No. Large Non Tagged Char (> 45 cm) | No. Medium Non Tagged Char (< 45cm) | Number of Tagged Char Observed (Swim Crew) | | | | Radio Tags Detected / Fish Data | | Comments | | | | | |
|--------|-----------|--------------|-----------------------|-------------------------------------|-------------------------------------|--|----------|-------------------------------|-------------|---------------------------------|--------------|----------|--|---------|------|----|---|
| | | | | | | Observed | Observed | Pink (with working radio tag) | White | Floy | Antenna Only | | Radio tagged char with spaghetti tag that could be observed by floater | Channel | Code | | |
| No. | Date | Time | Location | Km | UTM1 | UTM2 | No. | Trout | (Swim Crew) | (Swim Crew) | | | | | | | |
| 2 | 15-Sep-03 | 9:00 | Campsite 41 Silvertip | 20.2 | | | | | | | | | | | | | |
| 2 | 15-Sep-03 | 10:20 | 26 Mile Bridge | 18 | 633973 | 5442414 | 1 | 44 | | | | | | | | | |
| 2 | 15-Sep-03 | 10:40 | | | | | 2 | 7 | | | | | | | | | |
| 2 | 15-Sep-03 | 10:53 | | | | | 3 | 3 | | | | | | | | | |
| 2 | 15-Sep-03 | 11:01 | Maselpanik Crk | | 634202 | 5441524 | 4 | 1 | | | | | | | | | Water Temp is 6 deg C |
| 2 | 15-Sep-03 | 11:11 | | | | | 5 | 6 | | | | | | | | | |
| 2 | 15-Sep-03 | 11:19 | | | | | 6 | 2 | | | | | | | | | |
| 2 | 15-Sep-03 | 11:23 | | | | | 7 | 1 | | | | | | | | | |
| 2 | 15-Sep-03 | 11:30 | | | 634948 | 5441136 | 8 | 5 | 1 | | | | | | | | Pink Tagged char observed but RT not workin |
| 2 | 15-Sep-03 | 11:48 | | | | | 9 | 1 | 1 | | | | | | | | |
| 2 | 15-Sep-03 | 11:59 | | 15.5 | 635680 | 5440916 | 10 | 23 | 4 | 1 | | | | 1 | 5 | 14 | Water Temp is 5.5 deg C |
| 2 | 15-Sep-03 | 12:12 | | | | | 11 | 5 | | | | | | | | | |
| 2 | 15-Sep-03 | 12:14 | | | 635874 | 5440515 | 12 | 13 | 2 | 1 | | | | | | | 1st Deep Hole |
| 2 | 15-Sep-03 | 12:18 | | | 635852 | 5440371 | 13 | 6 | 3 | | | | | | | | Deep Hole |
| 2 | 15-Sep-03 | 12:20 | | | | | 14 | 20 | 1 | 1 | | | | | | | |
| 2 | 15-Sep-03 | 12:24 | | | | | 15 | 3 | | | | | | | | | |
| 2 | 15-Sep-03 | 12:32 | | | 636045 | 5439860 | 16 | 17 | 1 | | | | | | | | |
| 2 | 15-Sep-03 | 13:34 | | | 636063 | 5439570 | 17 | 20 | 6 | 2 | | | | | | | Water Temp is 5.5 deg C |
| 2 | 15-Sep-03 | 13:42 | | | | | 18 | 1 | | | | | | | | | |
| 2 | 15-Sep-03 | 13:48 | | | | | 19 | 37 | | | | | | | | | |
| 2 | 15-Sep-03 | 13:53 | | | | | 20 | 41 | | | | | | | | | |
| 2 | 15-Sep-03 | 13:56 | | | 636650 | 5439022 | 21 | 19 | | 2 | | | | | | | |
| 2 | 15-Sep-03 | 14:04 | | | 637005 | 5438696 | 22 | 32 | | 2 | | | | | | | |
| 2 | 15-Sep-03 | 14:06 | | | | | 23 | 25 | 1 | | | | | | | | |
| 2 | 15-Sep-03 | 14:09 | | | | | 24 | 2 | | | | | | | | | |
| 2 | 15-Sep-03 | 14:13 | | | | | 25 | 7 | | | | | | | | | |
| 2 | 15-Sep-03 | 14:16 | | 12.3 | 637212 | 5438527 | 26 | 19 | | 1 | | | | 1 | 7 | 42 | Antenna-only observed by floaters |
| 2 | 15-Sep-03 | | | | | | 27 | 34 | | | | | | | | | |
| 2 | 15-Sep-03 | | | | | | 28 | 8 | | | | | | | | | |
| 2 | 15-Sep-03 | | | | | | 29 | 33 | | | | | | | | | |
| 2 | 15-Sep-03 | | | | | | 30 | 22 | | | | | | | | | |
| 2 | 15-Sep-03 | | | | | | 31 | 10 | | | | | | | | | |

Appendix G2
 SKAGIT CHAR POPULATION ASSESSMENT SEPT 2003
 SWIM COUNTS/TELEMETRY SURVEY DATA ENTRY

Date: 15 Sept 2003

Snorkle Crew: CEJ Mussell and Pier van Dishoeck
 Telemetry Crew: Jack Mussell and Jim Rissling
 Location: Campsite 41 at Silver Tip (20.2 km) To High Bank (8.5km)
 Weather: Overcast with showers and sunny breaks
 Visibility: 5m+
 Water Temperature: 5 deg C at 26 Mile Bridge

| Survey | River | Fish "Group" | Number of Rainbow | No. Large Non Tagged Char (> 45 cm) | No. Medium Non Tagged Char (< 45cm) | Number of Tagged Char Observed (Swim Crew) | | | Radio Tags Detected / Fish Data | | Comments | | | | | |
|--------|-----------|--------------|-------------------|-------------------------------------|-------------------------------------|--|------|-------------------|--|---------|----------|--------------|--|---------|-----------------------|------------------------------------|
| | | | | Observed | Observed | White | Floy | Antenna Only | Radio tagged char with spaghetti tag that could be observed by floater | Channel | | Code | | | | |
| No. | Date | Time | Location | Km | UTM1 | UTM2 | No. | Trout (Swim Crew) | Pink (with working radio tag) | White | Floy | Antenna Only | Radio tagged char with spaghetti tag that could be observed by floater | Channel | Code | Comments |
| 2 | 15-Sep-03 | | | | | | 32 | 5 | | | | | | | | |
| 2 | 15-Sep-03 | | | | | | 33 | | | 1 | | 1 | | | | |
| 2 | 15-Sep-03 | 15:08 | | | 637847 | 5438078 | 34 | | | 2 | | 2 | | | | |
| 2 | 15-Sep-03 | 15:11 | | | | | 35 | 3 | | | | | | | | |
| 2 | 15-Sep-03 | 15:13 | | | | | 36 | 12 | | | | | | | | |
| 2 | 15-Sep-03 | 15:17 | | | | | 37 | 2 | | | | | | | | |
| 2 | 15-Sep-03 | 15:19 | | | | | 38 | 5 | | | | | | | | |
| 2 | 15-Sep-03 | 15:21 | | | | | 39 | 20 | | | | | | | | |
| 2 | 15-Sep-03 | 15:26 | | | | | 40 | 2 | | | | | | | | Visibility 7+ m |
| 2 | 15-Sep-03 | 15:28 | | | | | 41 | 1 | | | | | | | | |
| 2 | 15-Sep-03 | 15:44 | | | | | | | | | | | | | | This section too shallow to float. |
| 2 | 15-Sep-03 | 15:46 | | | | | 42 | 32 | | | | | | | | |
| 2 | 15-Sep-03 | 15:50 | | | | | 43 | 2 | | | | | | | | |
| 2 | 15-Sep-03 | 15:52 | | | | | 44 | 1 | | | | | | | | |
| 2 | 15-Sep-03 | 15:55 | | | | | 45 | 6 | | | | | | | | Water Temp 6.5 deg C |
| 2 | 15-Sep-03 | 15:58 | | | | | 46 | 67 | | | | | | | | |
| 2 | 15-Sep-03 | 16:06 | | | 637903 | 5435975 | 47 | 101 | | | | 3 | | | | |
| 2 | 15-Sep-03 | 16:17 | | 8.8 | 638094 | 5436000 | 48 | 83 | | | | | 1 | 7 | 77 Missed by floaters | |
| 2 | 15-Sep-03 | 16:18 | | | | | 49 | 16 | | 4 | | 2 | | | | |
| 2 | 15-Sep-03 | 16:22 | High Bank | 8.5 | | | 50 | | | | | | | | | |
| 2 | 15-Sep-03 | | | | | | | | | | | | | | | |
| Totals | | | | | | | 825 | 27 | 17 | 1 | 0 | 0 | 1 | 2 | 3 | |

Total Radio tag char with spaghetti tag seen 1
 Total Radio tagged char with spaghetti tag detected 2
 Observer Efficiency 0.500
 Expansion Factor 2.000
 Total Char Count 46
 Expanded Char Estimate 92
 Total Rainbow Count 825
 Expanded Rainbow Estimate 1650

Appendix G3
 SKAGIT CHAR POPULATION ASSESSMENT SEPT 2003
 SWIM COUNTS/TELEMETRY SURVEY DATA ENTRY

Date: 16 Sept 2003

Snorkle Crew: CEJ Mussell and Pier van Dishoeck

Telemetry Crew: Jack Mussell and Jim Rissling

Location: High Bank (8.5km) To Ross Lake Fishing Boundary (0km)

Weather: Overcast with showers and sunny breaks

Visibility: 5m+

Water Temperature: 4.5 deg C at High Bank

| Survey | River | Unique Fish "Group" | Number of Rainbow | No. Large Non Tagged Char (> 45 cm) | No. Medium Non Tagged Char (< 45cm) | Number of Tagged Char Observed (Swim Crew) | | | | Radio Tags Detected / Fish Data | | Comments | | | | | | | |
|--------|-----------|---------------------|-------------------|-------------------------------------|-------------------------------------|--|----------|-------------------------------|-------------|---------------------------------|--------------|----------|--|---------|------|---|---|---|---|
| | | | | | | Observed | Observed | Pink (with working radio tag) | White | Floy | Antenna Only | | Radio tagged char with spaghetti tag that could be observed by floater | Channel | Code | | | | |
| No. | Date | Time | Location | Km | UTM1 | UTM2 | No. | Trout (Swim Crew) | (Swim Crew) | | | | | | | | | | |
| 2 | 16-Sep-03 | 9:19 | High Bank | 8.5 | 638258 | 5435965 | 1 | 12 | | | | | | | | | | | |
| 2 | 16-Sep-03 | 9:24 | | | | | 2 | 5 | | | | | | | | | | | |
| 2 | 16-Sep-03 | 9:29 | | | | | 3 | 4 | | | | | | | | | | | |
| 2 | 16-Sep-03 | 9:37 | | | 638222 | 5435062 | 4 | 52 | | | 1 | | | | | | | Yellow Floy observed by floaters | |
| 2 | 16-Sep-03 | 10:00 | Nepopekum Trib | | 638525 | 5434795 | 5 | 53 | | | 1 | | | | 7 | | | 38 Fish up Neopokpum Trib; not be seen by floaters. | |
| 2 | 16-Sep-03 | 10:07 | | | | | 6 | 14 | | | | | | | | | | | |
| 2 | 16-Sep-03 | 10:12 | | | | | 7 | 30 | | | | | | | | | | | |
| 2 | 16-Sep-03 | | | | | | 8 | 50 | | | | | | | | | | | |
| 2 | 16-Sep-03 | | | 6.8 | 638776 | 5434184 | 9 | 450 | 16 | | 5 | 1 | 1 | | 1 | 5 | | 23 Visual by floaters | |
| 2 | 16-Sep-03 | 10:41 | | | | | 10 | 22 | | | | | | | | | | | |
| 2 | 16-Sep-03 | 10:50 | | | | | 11 | 29 | | | | | | | | | | | |
| 2 | 16-Sep-03 | 10:55 | | | | | 12 | 7 | | | | | | | | | | | |
| 2 | 16-Sep-03 | 10:57 | | | 639383 | 5433705 | 13 | 26 | | 1 | 1 | | | | | | | | |
| 2 | 16-Sep-03 | 11:36 | | | | | 14 | 15 | | | | | | | | | | | |
| 2 | 16-Sep-03 | 11:39 | | | | | 15 | 8 | | | | | | | | | | | |
| 2 | 16-Sep-03 | 11:45 | | | | | 16 | 66 | | | | | | | | | | | |
| 2 | 16-Sep-03 | 11:46 | | | 639313 | 5433396 | 17 | 4 | | | 2 | | | | | | | Water Temp 5 deg C | |
| 2 | 16-Sep-03 | 11:51 | | | | | 18 | 4 | | | | | | | | | | | |
| 2 | 16-Sep-03 | 11:52 | | | | | 19 | 8 | | | | | | | | | | | |
| 2 | 16-Sep-03 | 11:56 | | | | | 20 | 5 | | | | | | | | | | | |
| 2 | 16-Sep-03 | 11:58 | | | | | 21 | 16 | | | | | | | | | | | |
| 2 | 16-Sep-03 | 12:03 | | | 639670 | 5433140 | 22 | 30 | 3 | | 1 | | | | | | | | |
| 2 | 16-Sep-03 | 12:04 | | | | | 23 | 6 | | 3 | | | | | | | | | |
| 2 | 16-Sep-03 | 12:06 | | | | | 24 | 10 | | | | | | | | | | | |
| 2 | 16-Sep-03 | 12:09 | | | | | 25 | 52 | | | | | | | | | | | |
| 2 | 16-Sep-03 | 12:11 | | | | | 26 | 2 | | | | | | | | | | | |
| 2 | 16-Sep-03 | 12:13 | | | 639721 | 5433020 | 27 | 8 | | 2 | 1 | | | | | | | | |
| 2 | 16-Sep-03 | 12:15 | | | | | | 3 | | | | | | | | | | | |
| 2 | 16-Sep-03 | 12:18 | | | 639962 | 5432995 | | 3 | | 1 | | | | | | | | | |
| 2 | 16-Sep-03 | 12:21 | | | | | | 5 | | | | | | | | | | | |
| 2 | 16-Sep-03 | 12:29 | | | | | | 16 | | | | | | | | | | | |
| 2 | 16-Sep-03 | 12:36 | | | | | | 33 | | | | | | | | | | | |
| 2 | 16-Sep-03 | 13:01 | | 4.2 | 640741 | 5432742 | | 12 | | 4 | | | | 2 | | | 1 | 212 Yellow Floy Tag Observed | |
| 2 | 16-Sep-03 | | | 4.2 | | | | | | | | | | | | | 5 | 70 Yellow Floy Tag Observed | |
| 2 | 16-Sep-03 | | | | | | | 12 | | | | | | | | | | | |
| 2 | 16-Sep-03 | 13:49 | | | | | | 14 | | 3 | | | | | | | | | |
| 2 | 16-Sep-03 | 13:50 | | | 641005 | 5432674 | | 10 | | 1 | 1 | | | | | | | Water Temp 5 deg C | |
| 2 | 16-Sep-03 | 14:02 | | 2.7 | 641194 | 5432130 | | 10 | | 1 | | | 1 | | | 1 | 7 | 35 This is also fish 5-51 (Old two tag) | |
| 2 | 16-Sep-03 | | | | | | | 1 | | | | | | | | | | | |
| 2 | 16-Sep-03 | 14:09 | | | | | | 32 | | | | | | | | | | | |
| 2 | 16-Sep-03 | 14:11 | | | | | | 36 | | | | | | | | | | | |
| 2 | 16-Sep-03 | 14:14 | | | | | | 11 | | 3 | | | | | | | | | |
| 2 | 16-Sep-03 | 14:17 | | | | | | 3 | | 3 | | | | | | | | | |
| 2 | 16-Sep-03 | 14:18 | | 2.4 | 641197 | 5432139 | | 2 | | | 1 | | 1 | | | 1 | 7 | 34 Visual by floaters | |
| 2 | 16-Sep-03 | | | | | | | 14 | | 3 | | | | | | | | | |
| 2 | 16-Sep-03 | 14:30 | | | | | | 26 | | | | | | | | | | | Visibility reduced by bank erosion (3m) |

Appendix G3
 SKAGIT CHAR POPULATION ASSESSMENT SEPT 2003
 SWIM COUNTS/TELEMETRY SURVEY DATA ENTRY

Date: 16 Sept 2003

Snorkle Crew: CEJ Mussell and Pier van Dishoeck

Telemetry Crew: Jack Mussell and Jim Rissling

Location: High Bank (8.5km) To Ross Lake Fishing Boundary (0km)

Weather: Overcast with showers and sunny breaks

Visibility: 5m+

Water Temperature: 4.5 deg C at High Bank

| Survey | River | Fish "Group" | Number of Rainbow | No. Large Non Tagged Char (> 45 cm) Observed | No. Medium Non Tagged Char (< 45cm) Observed | Number of Tagged Char Observed (Swim Crew) | | | Radio tagged char with spaghetti tag that could be observed by floater | Radio Tags Detected / Fish Data | | Comments | | | | | | | |
|---|-----------|--------------|-------------------|--|--|--|---------|-------------------|--|---------------------------------|---------|----------|------|---|---|----|---|--|--|
| | | | | | | Pink (with working radio tag) | White | Floy | | Antenna Only | Channel | | Code | | | | | | |
| No. | Date | Time | Location | Km | UTM1 | UTM2 | No. | Trout (Swim Crew) | (Swim Crew) | | | | | | | | | | |
| 2 | 16-Sep-03 | 14:33 | | | | | | 8 | | | | | | | | | | | |
| 2 | 16-Sep-03 | 14:35 | | | | | | 8 | | | | | | | | | | | |
| 2 | 16-Sep-03 | 14:39 | | | | | | 250 | 1 | 3 | | | | | | | | | |
| 2 | 16-Sep-03 | 14:45 | Swing Bridge | 1.5 | 641838 | 5431191 | | 7 | | | | | | | | | | | |
| 2 | 16-Sep-03 | 15:00 | | | | | | 1 | 1 | | | | | | | | | | |
| 2 | 16-Sep-03 | 15:06 | | | | | | 32 | 7 | 4 | 1 | | | 1 | 7 | 43 | Visual by floaters (Water temp 6 deg C) | | |
| 2 | 16-Sep-03 | 15:12 | | | | | | 5 | | | | | | | | | | | |
| 2 | 16-Sep-03 | 15:30 | | | 0 | 641549 | 5429920 | 300 | | | | | | | | | | | |
| 2 | 16-Sep-03 | | | | | | | | | | | | | | | | | | |
| 2 | 16-Sep-03 | | | | | | | | | | | | | | | | | | |
| 2 | 16-Sep-03 | | | | | | | | | | | | | | | | | | |
| 2 | 16-Sep-03 | | | | | | | | | | | | | | | | | | |
| 2 | 16-Sep-03 | | | | | | | | | | | | | | | | | | |
| Totals | | | | | | | | 1842 | 53 | 24 | 4 | 1 | 3 | 0 | 0 | 4 | 7 | | |
| Total Radio tag char with spaghetti tag seen | | | | | | | | | | 4 | | | | | | | | | |
| Total Radio tagged char with spaghetti tag detected | | | | | | | | | | 4 | | | | | | | | | |
| Observer Efficiency | | | | | | | | | | 1.000 | | | | | | | | | |
| Expansion Factor | | | | | | | | | | 1.000 | | | | | | | | | |
| Total Char Count | | | | | | | | | | 85 | | | | | | | | | |
| Expanded Char Estimate | | | | | | | | | | 85 | | | | | | | | | |
| Total Rainbow Count | | | | | | | | | | 1842 | | | | | | | | | |
| Expanded Rainbow Estimate | | | | | | | | | | 1842 | | | | | | | | | |

After entering lake, visibility was limited 5m and floaters saw over 450 rainbow and 28 large char and 2 small char. They also saw 2 pink tagged fish and 2 antenna only fish. The reciever detected 8 radio tagged fish but they could have been easily missed.

Appendix H

Appendix H1 Skagit River swim count data: 8 Oct 2003

Appendix H2 Skagit River swim count data: 9 Oct 2003



Appendix H1
 SKAGIT CHAR POPULATION ASSESSMENT OCT 8-9, 2003
 SWIM COUNTS/TELEMETRY SURVEY DATA ENTRY

Date: 8 Oct 2003
 Snorkle Crew: CEJ Mussell and Pier van Dishoeck
 Telemetry Crew: Jack Mussell and Iain Lunn
 Location: 26 Mile Bridge (18 km) To High Bank (8.5km)
 Weather: Overcast with showers and sunny breaks
 Visibility: 5m
 Water Temperature: 9 deg C at High Bank

| Survey | River | Unique Fish "Group" | Number of Rainbow | No. Large Non Tagged Char (> 45 cm) Observed | No. Medium Non Tagged Char (< 45cm) Observed | Number of Tagged Char Observed (Swim Crew) | | | | Radio Tags Detected / Fish Data | | Comments | | | | | |
|--------|-----------|---------------------|------------------------|--|--|--|-------|-------|--------------|--|---------|----------|------|---|---|---|---|
| | | | | | | Pink (with working radio tag) | White | Floy | Antenna Only | Radio tagged char with spaghetti tag that could be observed by floater | Channel | | Code | | | | |
| No. | Date | Time | Location | Km | UTM1 | UTM2 | No. | Trout | (Swim Crew) | (Swim Crew) | | | | | | | |
| 3 | 08-Oct-03 | 9:13 | 26 Mile Bridge | 18 | 633845 | 5442078 | 1 | 6 | | | | | | | | | |
| 3 | 08-Oct-03 | 9:43 | 1st Trib on right bank | | 633840 | 5442042 | 2 | | | 1 | | | | | | | Visibility decreased from trib downstream to 3.5 m |
| 3 | 08-Oct-03 | 9:53 | | | | | 3 | 2 | | 2 | | | | | | | Fish in this area look like spawners |
| 3 | 08-Oct-03 | 10:00 | | | | | | | | | | | | | | | Visibility has decreased to 3m |
| 3 | 08-Oct-03 | 10:07 | | | | | 4 | 2 | | | | | | | | | |
| 3 | 08-Oct-03 | 10:20 | | | | | 5 | | | 6 | | | | | | | |
| 3 | 08-Oct-03 | 10:35 | | | | | 6 | | | 1 | | | | | | | Fish associated with redds in area |
| 3 | 08-Oct-03 | | | | | | 7 | 1 | | | | | | | | | |
| 3 | 08-Oct-03 | | | | | | 8 | 2 | | | | | | | | | |
| 3 | 08-Oct-03 | 10:57 | | 16 | | | 9 | 12 | | 5 | | 1 | | | 1 | 5 | 14 Visual pink tag by floater |
| 3 | 08-Oct-03 | 11:02 | | | | | 10 | | | | 1 | | | | | | |
| 3 | 08-Oct-03 | 11:07 | | | | | 11 | | | 2 | 2 | | | | | | |
| 3 | 08-Oct-03 | 11:10 | 1st Pullout | 15.3 | | | 12 | 1 | | 2 | | | | | | | |
| 3 | 08-Oct-03 | | | | | | 13 | 5 | | | | | | | | | |
| 3 | 08-Oct-03 | 11:20 | | | | | 14 | 4 | | 3 | 1 | | | | | | |
| 3 | 08-Oct-03 | 11:22 | | 14.9 | | | 15 | | | | | | | 1 | 5 | | 34 Missed by floaters. |
| 3 | 08-Oct-03 | 11:27 | | | | | 16 | 1 | | 1 | 1 | | | | | | |
| 3 | 08-Oct-03 | 11:35 | | | | | | | | | | | | | | | |
| 3 | 08-Oct-03 | 11:50 | | | | | 17 | 1 | | | | | | | | | Large dead char in pool. Belly eaten by a bear or otter |
| 3 | 08-Oct-03 | 12:25 | | | | | 18 | 13 | | | | | | | | | |
| 3 | 08-Oct-03 | 12:43 | | | | | 19 | 6 | | | | | | | | | Visibility back to 4m |
| 3 | 08-Oct-03 | 13:04 | | | | | 20 | 13 | | 3 | 2 | | | | | | |
| 3 | 08-Oct-03 | | | | | | 21 | 18 | | | | | | | | | |
| 3 | 08-Oct-03 | | | | | | 22 | 1 | | | | | | | | | |
| 3 | 08-Oct-03 | | | | | | 23 | 6 | | | | | | | | | |
| 3 | 08-Oct-03 | 13:25 | | | | | 24 | 11 | | | | | | | | | |
| 3 | 08-Oct-03 | 13:30 | | | | | 25 | 18 | | | 2 | | | | | | |
| 3 | 08-Oct-03 | | | | | | 26 | 11 | | | | | | | | | |
| 3 | 08-Oct-03 | | | | | | 27 | 6 | | | | | | | | | |
| 3 | 08-Oct-03 | 13:46 | 2nd Pullout | 11.1 | | | | | | | | | | | | | Temp 9deg C |
| 3 | 08-Oct-03 | 13:50 | | | | | 28 | 4 | | 1 | | | | | | | |
| 3 | 08-Oct-03 | | | | | | | 1 | | | | | | | | | |
| 3 | 08-Oct-03 | | | | | | | 17 | | | | | | | | | |

Appendix H1
 SKAGIT CHAR POPULATION ASSESSMENT OCT 8-9, 2003
 SWIM COUNTS/TELEMETRY SURVEY DATA ENTRY

Date: 8 Oct 2003
 Snorkle Crew: CEJ Mussell and Pier van Dishoeck
 Telemetry Crew: Jack Mussell and Iain Lunn
 Location: 26 Mile Bridge (18 km) To High Bank (8.5km)
 Weather: Overcast with showers and sunny breaks
 Visibility: 5m
 Water Temperature: 9 deg C at High Bank

| Survey | River | Unique Fish "Group" | Number of Rainbow | No. Large Non Tagged Char (> 45 cm) Observed | No. Medium Non Tagged Char (< 45cm) Observed | Number of Tagged Char Observed (Swim Crew) | | | | Radio Tags Detected / Fish Data | | Comments | | | | | | | |
|---|-----------|---------------------|-------------------|--|--|--|-------|-------|--------------|--|-------------------------------|----------|------|--------------|--|---------|------|----------|--|
| | | | | | | Pink (with working radio tag) | White | Floy | Antenna Only | Radio tagged char with spaghetti tag that could be observed by floater | Channel | | Code | | | | | | |
| No. | Date | Time | Location | Km | UTM1 | UTM2 | No. | Trout | (Swim Crew) | (Swim Crew) | Pink (with working radio tag) | White | Floy | Antenna Only | Radio tagged char with spaghetti tag that could be observed by floater | Channel | Code | Comments | |
| 3 | 08-Oct-03 | 14:09 | | | | | | 1 | 2 | | | | | | | | | | |
| 3 | 08-Oct-03 | | | | | | | 2 | | | | | | | | | | | |
| 3 | 08-Oct-03 | | | | | | | 3 | | | | | | | | | | | |
| 3 | 08-Oct-03 | | | | | | | 4 | | | | | | | | | | | |
| 3 | 08-Oct-03 | 14:44 | | | | | | 5 | 1 | 1 | | | | | | | | | |
| 3 | 08-Oct-03 | | | | | | | 4 | | | | | | | | | | | |
| 3 | 08-Oct-03 | 15:00 | High Bank | 8.5 | | | | 26 | 2 | 2 | | | | | | | | | |
| Totals | | | | | | | | 207 | 32 | 12 | 1 | 0 | 0 | 0 | 2 | 2 | | | |
| Total Radio tag char with spaghetti tag seen | | | | | | | | | | | 1 | | | | | | | | |
| Total Radio tagged char with spaghetti tag detected | | | | | | | | | | | 2 | | | | | | | | |
| Observer Efficiency | | | | | | | | | | | 0.500 | | | | | | | | |
| Expansion Factor | | | | | | | | | | | 2.000 | | | | | | | | |
| Total Char Count | | | | | | | | | | | 45 | | | | | | | | |
| Expanded Char Estimate | | | | | | | | | | | 90 | | | | | | | | |
| Total Rainbow Count | | | | | | | | | | | 207 | | | | | | | | |
| Expanded Rainbow Estimate | | | | | | | | | | | 414 | | | | | | | | |

Appendix H2
SKAGIT CHAR POPULATION ASSESSMENT OCT 8-9, 2003
SWIM COUNTS/TELEMETRY SURVEY DATA ENTRY

Date: Oct. 9, 2003
 Snorkle Crew: CEJ Mussell and Pier van Dishoeck
 Telemetry Crew: Jack Mussell and Iain Lunn
 Location: High Bank (8.5km) To Ross Lake Fishing Boundary (0km)
 Weather: Overcast with showers and sunny breaks
 Visibility: 5m+ Water Level: 1 3/4 Inches
 Water Temperature: 8 deg C at High Bank

| Survey | River | Unique Fish "Group" | Number of Rainbow | No. Large Non Tagged Char (> 45 cm) | No. Medium Non Tagged Char (< 45cm) | Number of Tagged Char Observed (Swim Crew) | | | | Radio Tags Detected / Fish Data | | Comments | | | | | |
|--------|-----------|---------------------|-------------------|-------------------------------------|-------------------------------------|--|-------|-------|--------------|--|---------|----------|------|---|---|---|---|
| | | | | Observed | Observed | Pink (with working radio tag) | White | Floy | Antenna Only | Radio tagged char with spaghetti tag that could be observed by floater | Channel | | Code | | | | |
| No. | Date | Time | Location | Km | UTM1 | UTM2 | No. | Trout | (Swim Crew) | (Swim Crew) | | | | | | | |
| 3 | 09-Oct-03 | 9:08 | High Bank | 8.5 | | | | | | | | | | | | | |
| 3 | 09-Oct-03 | | | | | | 1 | 26 | | 2 | | | | | | | |
| 3 | 09-Oct-03 | 9:33 | Neopokum Mouth | | | | 2 | 4 | | | | | | | | | Water Temp 8 deg C |
| 3 | 09-Oct-03 | 9:52 | | | | | 3 | 31 | | 1 | | | | | | | |
| 3 | 09-Oct-03 | 9:55 | | 7 | | | | | | | | | | | 7 | | 38 Tag found by floaters on log. Fell prey to an otter/eagle/b... |
| 3 | 09-Oct-03 | 10:22 | | | | | | | | | | | | | | | Visibility 4m |
| 3 | 09-Oct-03 | 10:24 | | 6.7 | | | 4 | 350 | | 8 | | 7 | | 1 | 7 | | 42 Visual by floater of antenna only. |
| 3 | 09-Oct-03 | 11:33 | | | | | 5 | 55 | | | | 1 | | | | | White tag 1280 recovered |
| 3 | 09-Oct-03 | 11:35 | | 6.6 | | | 6 | 7 | | | | | | | 1 | 5 | 23 Missed by floaters on 1st pass. Seen after much searchin |
| 3 | 09-Oct-03 | 11:56 | | | | | 7 | | | | | 1 | | | | | |
| 3 | 09-Oct-03 | 12:05 | | | | | | 5 | | 1 | | | | | | | |
| 3 | 09-Oct-03 | 12:12 | | | | | | | | | | | | | | | |
| 3 | 09-Oct-03 | 12:49 | | | | | | 1 | | | | | | | | | Water Temp 10 deg C |
| 3 | 09-Oct-03 | | | | | | | 1 | | | | | | | | | |
| 3 | 09-Oct-03 | 13:00 | | | | | | 3 | | | | 1 | | | | | Fish are not in spawning colours |
| 3 | 09-Oct-03 | | | | | | | 1 | | | | | | | | | |
| 3 | 09-Oct-03 | | | | | | | 4 | | | | | | | | | |
| 3 | 09-Oct-03 | | | | | | | 36 | | | | | | | | | |
| 3 | 09-Oct-03 | 13:36 | | | | | | 1 | | | | | | | | | |
| 3 | 09-Oct-03 | 13:41 | | | | | | | | 1 | | | | | | | |
| 3 | 09-Oct-03 | | | | | | | 16 | | | | | | | | | |
| 3 | 09-Oct-03 | | | | | | | 23 | | | | | | | | | Water temp 10 degC |
| 3 | 09-Oct-03 | 13:58 | | | | | | | | | | | | | | | |
| 3 | 09-Oct-03 | 14:00 | T-bar Pool | 3.6 | | | | | | 1 | | | | | | | |
| 3 | 09-Oct-03 | 14:19 | | | | | | | | 1 | | | | | | | |
| 3 | 09-Oct-03 | | | | | | | 3 | | | | | | | | | |
| 3 | 09-Oct-03 | | | | | | | 2 | | | | | | | | | |
| 3 | 09-Oct-03 | | | | | | | 1 | | | | | | | | | |
| 3 | 09-Oct-03 | | | | | | | 9 | | | | | | | | | |
| 3 | 09-Oct-03 | | | | | | | 1 | | | | | | | | | |

Appendix H2
SKAGIT CHAR POPULATION ASSESSMENT OCT 8-9, 2003
SWIM COUNTS/TELEMETRY SURVEY DATA ENTRY

Date: Oct. 9, 2003
 Snorkle Crew: CEJ Mussell and Pier van Dishoeck
 Telemetry Crew: Jack Mussell and Iain Lunn
 Location: High Bank (8.5km) To Ross Lake Fishing Boundary (0km)
 Weather: Overcast with showers and sunny breaks
 Visibility: 5m+ Water Level: 1 3/4 Inches
 Water Temperature: 8 deg C at High Bank

| Survey | River | Unique Fish "Group" | Number of Rainbow | No. Large Non Tagged Char (> 45 cm) Observed | No. Medium Non Tagged Char (< 45cm) Observed | Number of Tagged Char Observed (Swim Crew) | | | | Radio Tags Detected / Fish Data | | Comments | | | | | | | |
|--|-----------|---------------------|-------------------|--|--|--|-------|-------|--------------|--|---------|----------|------|---|---|---|--|---|--|
| | | | | | | Pink (with working radio tag) | White | Floy | Antenna Only | Radio tagged char with spaghetti tag that could be observed by floater | Channel | | Code | | | | | | |
| No. | Date | Time | Location | Km | UTM1 | UTM2 | No. | Trout | (Swim Crew) | (Swim Crew) | | | | | | | | | |
| 3 | 09-Oct-03 | 14:44 | | | | | | 110 | 3 | 4 | | | | | | | | | |
| 3 | 09-Oct-03 | 14:50 | Suspension Bridge | 1.5 | | | | 1 | | | | | | | | | | Water depth 1 3/4 inches | |
| 3 | 09-Oct-03 | | | | | | | 7 | | | | | | | | | | | |
| 3 | 09-Oct-03 | | | | | | | 1 | | | | | | | | | | | |
| 3 | 09-Oct-03 | | | | | | | 6 | | | | | | | | | | | |
| 3 | 09-Oct-03 | 15:13 | | 0.3 | | | | 15 | 5 | 8 | 1 | | | 1 | 5 | | | 21 Visual by floaters | |
| 3 | 09-Oct-03 | | | | | | | 6 | | | | | | | | | | | |
| 3 | 09-Oct-03 | 15:21 | | | | | | 9 | | | | | | | | | | Water temp 10 deg C | |
| 3 | 09-Oct-03 | 15:23 | | 0 | | | | | | | | | | | 5 | | | 73 Missed by floaters (antenna only); 17 char detected rkm -1 | |
| Totals | | | | | | | | 735 | 23 | 22 | 1 | 0 | 0 | 1 | 2 | 4 | | | |
| Total Radio tag char with spaghetti tag seen | | | | | | | | | | | 1 | | | | | | | | |
| Total Radio tagged char with spaghetti tag detected | | | | | | | | | | | 2 | | | | | | | | |
| Observer Efficiency | | | | | | | | | | | 0.500 | | | | | | | | |
| Expansion Factor | | | | | | | | | | | 2.000 | | | | | | | | |
| Total Char Count | | | | | | | | | | | 47 | | | | | | | | |
| Expanded Char Estimate | | | | | | | | | | | 94 | | | | | | | | |
| Total Rainbow Count | | | | | | | | | | | 735 | | | | | | | | |
| Expanded Rainbow Estimate | | | | | | | | | | | 1470 | | | | | | | | |