2015 In-season Escapement Estimates of Fraser River Salmon at Qualark Dual-frequency Identification Sonar (DIDSON) Site with Test Fishing Results and Species Apportionment

2015 Project Report to Southern Boundary Restoration and Enhancement Fund

by

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ABSTRACT

The Qualark DIDSON project produces in-season estimates of total daily salmon escapement in the Fraser River near Hope, BC. These estimates combine acoustic counts of salmon with species composition information derived from a drifted gill net test fishing program conducted at the acoustic site. Although estimates of daily escapement can be produced for all five species of Pacific salmon, the focus of the Qualark program is on Sockeye Salmon. These in-season escapement estimates can be used in conjunction with hydroacoustic estimates from Pacific Salmon Commissions Mission site and test fisheries to manage fisheries on Fraser River salmon stocks. The total salmon escapement passing Qualark in 2015 was estimated to be 3,334,840 (lower 95% CI = 3,197,021; upper 95% CI = 3,472,658), consisting of 1,821,374 Sockeye Salmon, 616,517 Chinook Salmon (including 33,960 jack Chinook Salmon), 2,408 Coho Salmon, and 894,540 Pink Salmon.

Additional testing and research was conducted using ARIS 1800, a second generation version of acoustic imaging technology. The ARIS system was used to examine potential passage occurring 10m beyond the normal range of DIDSON coverage. An expanded total of 6 salmon were observed beyond the normal range of coverage during a period of 8 days when the total salmon passage for this period was in excess of 400,000 salmon. A very small fraction of both the daily and total salmon migration occurs beyond 20m distance from the transducer on either side of the Fraser River at Qualark. Migration occurring beyond 20 m on either bank of the Fraser at Qualark, monitored or not, will not contribute a significant source of bias to annual estimation.

ARIS was also used to evaluate the impact of rolled DIDSON aim on near-bottom acoustic coverage. The ARIS simultaneously collected files with the same aim and range as the DIDSON Bin 1 (35^o roll; 4.17-9.17 m) except the ARIS files were collected at a 0^o roll. This allowed for comparison between rolled and flat orientation aims. Comparing hourly estimates from ARIS and DIDSON resulted in differences that were within the expected observer error. Data collected provided no evidence supporting suggestions of acoustic blind spots near the bottom with the standard -35^o roll DIDSON aim used at Qualark.

An alternate drift sequence was employed at Qualark in 2015 with the goal of comparing size, species and stock composition in test fishing catch when drifting the medium mesh size first instead of the normal net sequence which consists of the smallest mesh size first. Results are pending the completion of DNA processing.

INTRODUCTION

The Qualark site was developed using split-beam technology between 1993 and 1998 and employed a test fishing program to apportion the acoustic estimate by species (Enzenhofer and Cronkite, 1998). The Applied Technologies Section of the Department of Fisheries and Oceans re-activated the Qualark hydroacoustic site on the mainstem of the Fraser River in 2008 using multi-beam (DIDSON) technology to monitor the escapement of adult Pacific Salmon (*Oncorhynchus* spp.) to terminal spawning areas in the upper Fraser River watershed (Enzenhofer et al., 2010). A test fishery was implemented to provide biological and daily species composition data for the acoustic estimates. In recent years the site has been transferred from a research program to an operational project operated by DFO's Fraser Stock Assessment Program. All six Pacific salmon species (Sockeye Salmon (*O. nerka*), Pink Salmon (*O. gorbuscha*), Chinook Salmon (*O. tshawytscha*), Coho Salmon (*O. kisutch*), Chum Salmon (*O. keta*)) and Steelhead Trout (*O. mykiss*) return to spawn in the Fraser River and pass the Qualark site. Sockeye Salmon is the numerically dominant species in the Fraser River in even numbered years (e.g., 2014) while in odd numbered years (e.g., 2013) Pink Salmon are often more abundant than Sockeye Salmon.

The Pacific Salmon Commission (PSC) estimates gross escapement of Fraser River Sockeye Salmon at Mission, BC and this acoustic site is strategically located to provide key information for in-season management of Sockeye Salmon fisheries to meet multiple obligations under the Pacific Salmon Treaty. Reliable estimates of Sockeye Salmon escapement in the Fraser River are a prerequisite for achieving spawning escapement goals and harvest allocations. The Mission site poses technical challenges for the acoustic enumeration of salmon that contribute to the concerns among managers and other clients about the reliability of the Mission estimate (Enzenhofer et al, 2010).

In contrast to Mission, Qualark has site characteristics that are closer to the ideal for reliably detecting and tracking salmon, including Sockeye Salmon, as they move upstream (see Enzenhofer et al., 2010).

Project Goals

The 2015 program at Qualark was funded by Pacific Salmon Commissions (PSC) Southern Boundary Restoration and Enhancement Fund and is the 8th year of paired operation with Mission.

The goals of this project are to:

1. Produce reliable and timely estimates of gross in-season salmon escapement in the Fraser River using three study design elements that are complementary to work conducted by PSC staff at Mission:

- Operation of the Qualark DIDSON hydroacoustic enumeration systems in a manner consistent with practices developed from 2008 to 2010 (Enzenhofer et al., 2010);
- Implementation of the Qualark test fishery consistent with procedures developed during the period 2008 to 2010;
- Continued evaluation of fish flux occurring outside the normal acoustic monitoring window at Qualark with acoustic sampling on each bank within the 20 to 30 m range for 10 minutes per hour throughout the migration period;

2. Provide validation of Sockeye Salmon escapement estimates produced at Mission with the goal of providing managers with the best possible in-season escapement estimates to utilize for effective management of fisheries; and

3. Provide data that can be used to develop analytical methods to either modify or combine estimates from the Mission and Qualark hydroacoustic sites to provide a more robust estimate of salmon escapement into the Fraser River based on multiple years of data from 2008 to 2015 when both sites were operating.

Additional Research

1. Quantify salmon passage 10 m beyond the normal coverage of 29.17 m using long range ARIS files.

2. Compare passage between 35^{o} rolled DIDSON files and 0^{o} flat ARIS files collected simultaneously with the same aim to assess extent of acoustic coverage with the rolled DIDSON aim.

3. Compare size, species and stock composition in test fishing catch when drifting the medium mesh size first instead of the normal net sequence which consists of the smallest mesh size first.

This report documents hydroacoustic estimates of daily salmon escapement at Qualark in 2015, including daily test fishing catch and species apportionment data.

METHODS

Study Area

The Qualark hydroacoustic facility is located on the Fraser River in British Columbia, Canada and is 15 km north of Hope, BC and 95 km upstream of Mission, BC. The Qualark site is below many, but not all of the major Sockeye Salmon spawning areas in the Fraser River watershed (Figure 1). There are a number of Sockeye Salmon stocks that spawn below Qualark

including Pitt River, Chilliwack River, Harrison River, Birkenhead River, Weaver Creek and Cultus Lake stocks. Estimation of total Sockeye Salmon escapement to the Fraser River requires additional enumeration programs at these locations. Pink Salmon spawn primarily in the mainstem and tributaries of the lower Fraser River below Qualark. Variable proportions of the total Pink Salmon escapement migrate past Qualark and spawn in the mid and upper Fraser River and tributaries.

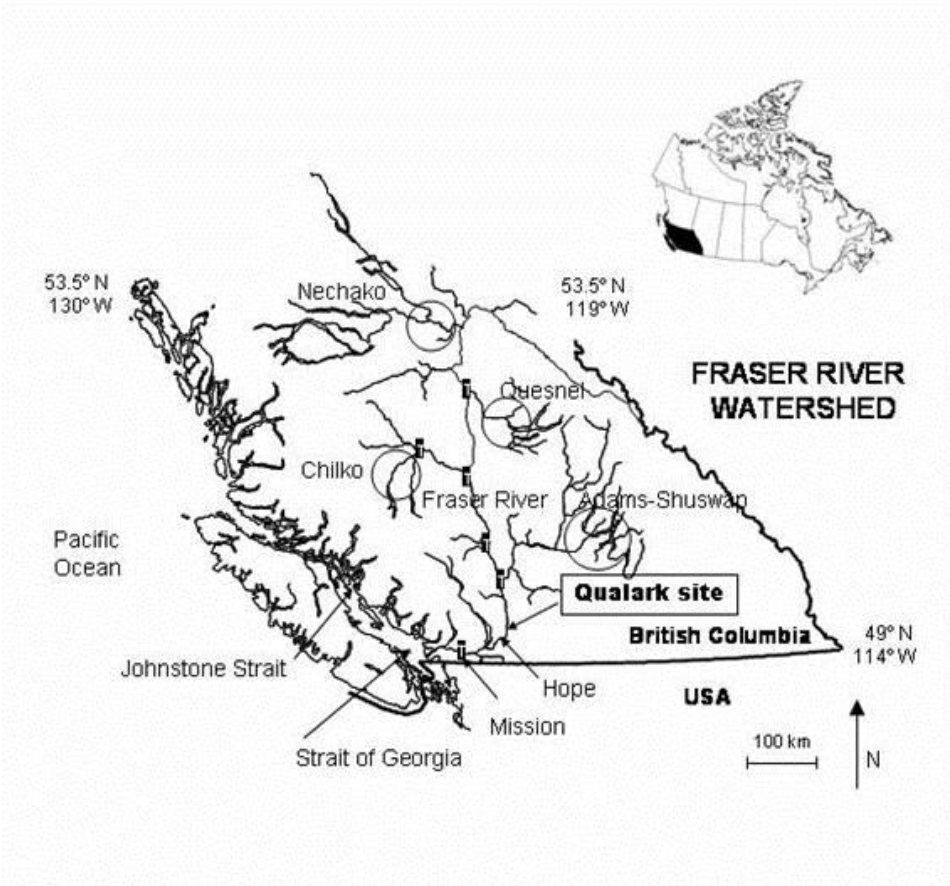

Figure 1. Map showing the Fraser River watershed and location of the Qualark hydroacoustic site near Hope, BC. Some of the major spawning areas including the Nechako, Quesnel, Chilko, and Adams-Shuswap Lake systems are circled.

The Qualark site was originally chosen as an experimental site because the site possessed a number of favorable characteristics (Enzenhofer and Cronkite, 2000). It was on a straight stretch of river with laminar flow, water velocity was high, flows were not tidally-influenced, and substrate and bank configurations were planar and free of obstructions (scalloping, benches, and large boulders) that might impair fish detection or introduce noise to the acoustic system. There was minimal human activity that would alter fish behaviour. These characteristics ensure that fish actively migrate through this area rather than holding or milling, which is a key factor to the success of a riverine acoustic site. The relatively high water velocities and consistent bank slopes combined with the energy conserving migration behaviour of salmon, result in most salmon, including Sockeye Salmon, migrating through the Qualark site within 20 m of the shore

regardless of discharge and water level. Consequently it is not necessary to continuously ensonify the middle of the river, although periodic checks to confirm the absence of fish escapement are necessary and prudent.

The Fraser River is 150 m wide at the Qualark site with discharge ranging from 10,000 m^3/s during spring freshet to 700 m^3/s during the low water period in winter (Environment Canada, 2015). The river banks have a natural slope of 21° (right-bank) and 20° (left-bank) with the surface layer comprised of 30-50 cm diameter rock and some large boulders (Figure 2). Left-bank (LB) and right-bank (RB) are relative to an observer facing downstream. Water velocities at the site range from 1.0 m/s near shore to 3-4 m/s in the middle of the river. Flow patterns vary from bank to bank, but in general fine materials are scoured along the right-bank and sand is deposited along the left-bank.

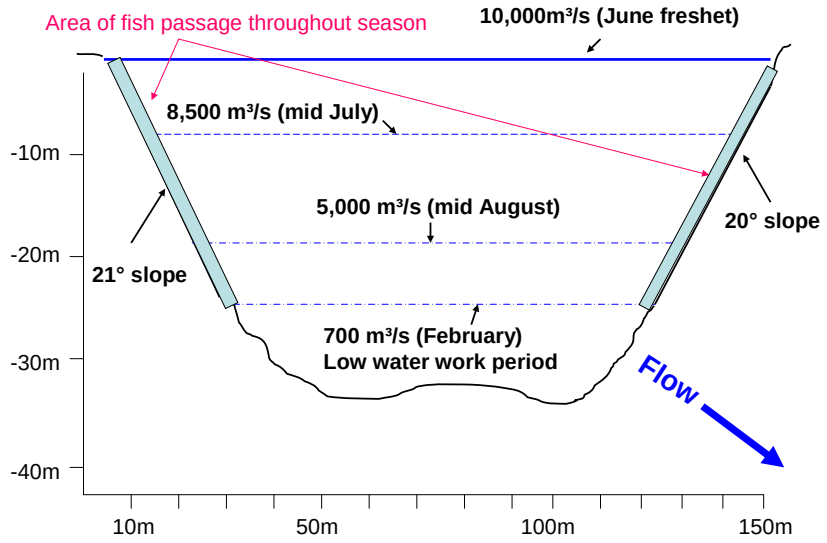

Figure 2. Fraser River cross section at the Qualark hydroacoustics site showing average discharge rates throughout the salmon migration period. Note that the vertical and horizontal scales differ. River flow is toward the viewer.

The RB is accessible by road and heavy equipment was used to refurbish the bank for acoustic work during the low water period in early 2008. The LB site is approximately 150 m downstream of the RB site and is only accessible via boat. Equipment and supplies were moved to the LB by boat and the refurbishment of the acoustic ramp and reinstallation of in-river equipment was done manually during the low water period in February of 2008. Refurbishment of the banks included removing large substrate, leveling the slope, adding sand bags and the track mounted fish deflection weir.

Equipment

Acoustic data were collected with two standard DIDSON imaging systems (one on each bank). The standard DIDSON imaging systems have high frequency (1.8 MHz) and low frequency modes (1.1MHz) and their output consists of images created by multiple sound beams focused through a moveable lens giving a field of view that is 14° vertical and 29° horizontal (Belcher et al., 2001; Sound Metrics 2007). The RB has hydroelectric lines to the site while the LB power source was a Power Pac (Enzenhofer et al., 2007) that was charged by a combination of a solar panel and a battery charger powered by a generator. The DIDSON systems are affixed to a track-mounted 6 m long fish deflection weir that can be adjusted in response to changes in river water levels with a remotely controlled winch (Enzenhofer et al., 2010). The DIDSON systems were mounted on an adjustable pole mount that facilitates adjustments to depth, bearing, tilt and roll (Enzenhofer and Cronkite, 2005).

DIDSON Configuration

The DIDSON system bearing was set so that the beam aim was perpendicular to the river flow with the upstream end of the weir barely visible on the edge of the image. The tilt on RB was set at -17^{o} relative to the surface while LB was -14^{o}. A -35^{o} roll was adopted on both banks. This configuration was fixed throughout the program, although minor adjustments were made to the bearing and tilt as the season progressed. The aiming configuration was verified with a target suspended in the ensonified region to ensure that there were no blind zones near the surface or bottom through which fish could pass undetected and is consistent with protocols outlined by Holmes et al. (2006).

Sampling Design

Based on split-beam sonar work at the Qualark site in the 1990s (Enzenhofer and Cronkite, 2000) and previous years DIDSON assessments, the majority of fish migration was expected to occur within a range of 5 m from the end of the deflection weir and the remainder were expected within the next 10 m. During times where set gill nets are deployed in the area during First Nations fisheries, fish migration can occur slightly further offshore. We used a systematic range stratified sampling design on each bank that utilized one aiming configuration of the DIDSON to sample between 4.17 m to 29.17 m in range, divided into three range bin files each hour (Enzenhofer et al., 2010; Figure 3). Data were collected for a total of 50 minutes out of each hour. On each bank three files were recorded hourly consisting of:

- 20 minute 5 m window length (4.17 m to 9.17 m) at high frequency mode (1.8 MHz utilizing 96 beams) producing the best available image resolution for counting the majority of fish escapement (Bin 1);
- 20 minute 10 m window length (9.17 m to 19.17 m) at low frequency mode (1.1 MHz utilizing 48 beams) (Bin 2); and
- 10 minute 10 m window length (19.17 m to 29.17 m) at low frequency mode (Long-Range Bin 3).

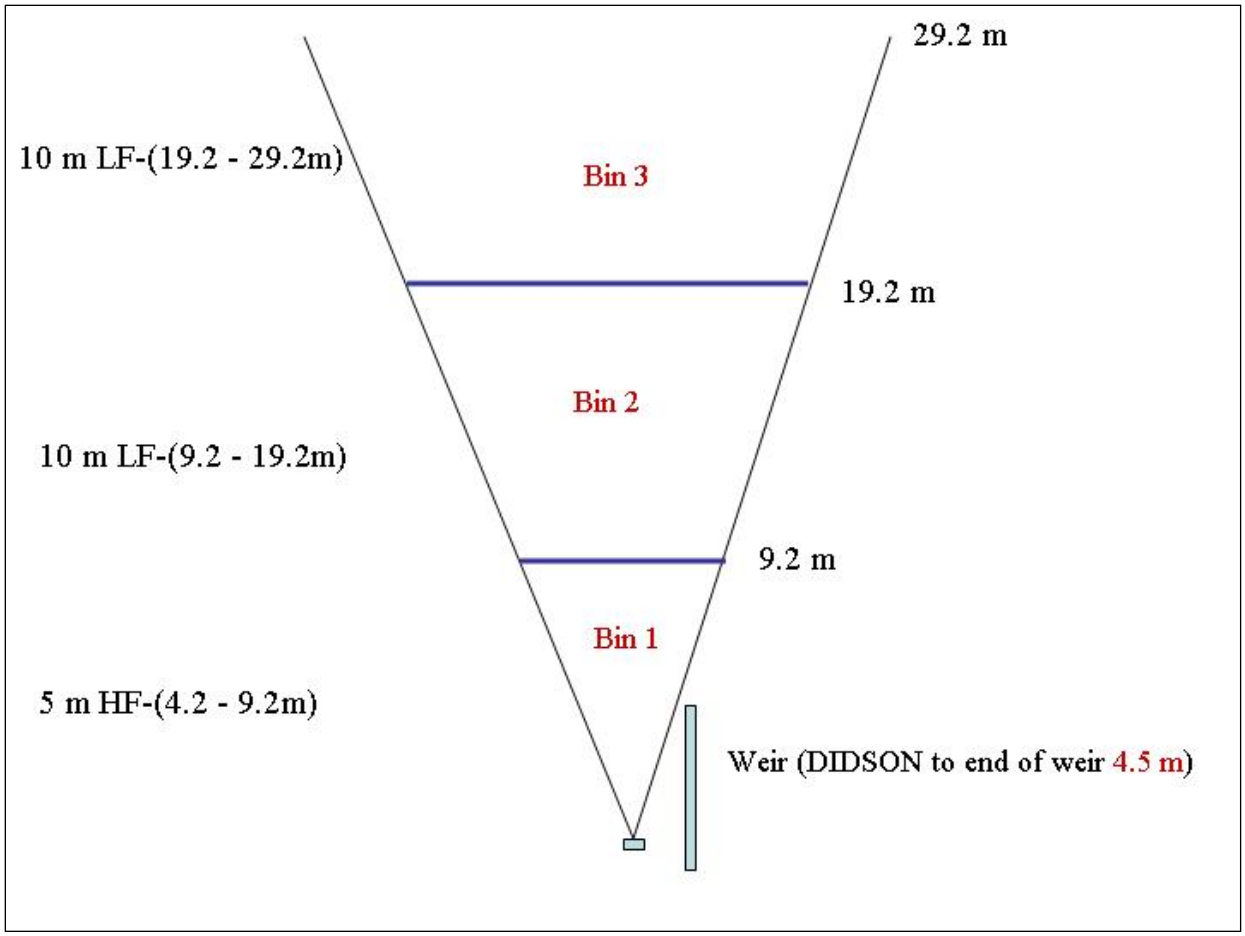

Figure 3. Plan view of the sampling strategy showing one aim configuration of the DIDSON and three range bins to sample 29.17 m range at the Qualark hydroacoustics site. Bin 1 is shown using a 5 m window length at high frequency (HF) starting at 4.17 m from the DIDSON. Bin 2 is shown with a 10 m window length in low frequency (LF) mode, from 9.17 m to 19.17 m from the DIDSON. Bin 3 is a 10 m window length in low frequency mode covering a range between 19.17 m to 29.17 m.

Data Processing Procedures

The DIDSON data files were saved directly onto laptop computer hard drives and subsequently backed up onto an external hard drive. The data was transferred from the DIDSON computers to a processing computer where the files were manually counted by site personnel applying pre-determined counting criteria to estimate net upstream flux (Enzenhofer et al., 2010). The upstream flux of migrating salmon is calculated as the upstream count minus the downstream count (Xie et al., 2002). Counting criteria addressed the potential for double counting of fish which may move out of or into an adjoining range bin (Figure 4 and 5). The expansion of 20 minute counts to hourly counts has been shown to be representative of the hourly flux (Lilja et al, 2007). In this same way the movement of fish in and out of the end of a range bin in a 20 minute file can be assumed to be representative of the behaviour during the whole hour. A minimum fish size limit was set at 30 cm (measured using the measurement tool on the DIDSON program) to remove smaller native species from the escapement estimate.

Identifiable non-salmon species (e.g. sturgeon) were not included in the counts. Test fishing over the past 7 years at Qualark indicate negligible numbers of non-salmon sized targets present at this site. Counting procedures relating to playback speed and file viewing settings (use of background subtraction, threshold and intensity settings) were utilized to insure consistency between different counters. Counting of files with counts in excess of 1,500 fish in the first 10 minutes was terminated at the 10 minute mark. Net upstream flux for each range bin was expanded to the hour and summed to represent total daily salmon escapement.

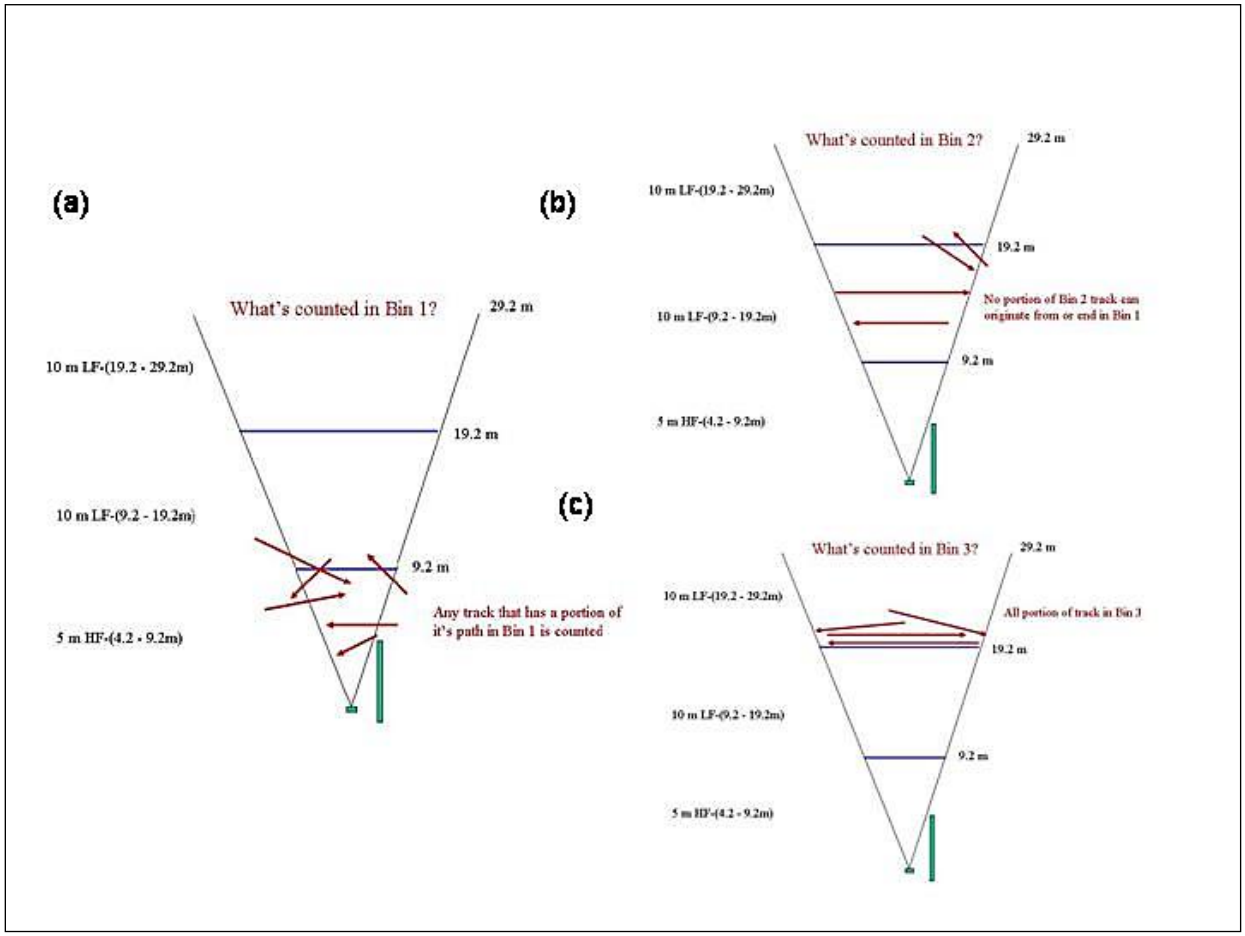

Figure 4. Counting criteria for manual counts of range bins to avoid double counting fish passing through more than one range bin. (a) Any portion of a fish trajectory is included in the Bin 1 count, (b) fish included in Bin 2 counts cannot have any portion of its track in Bin 1, and (c) fish included in the Bin 3 count must have entire portion of track in Bin 3.

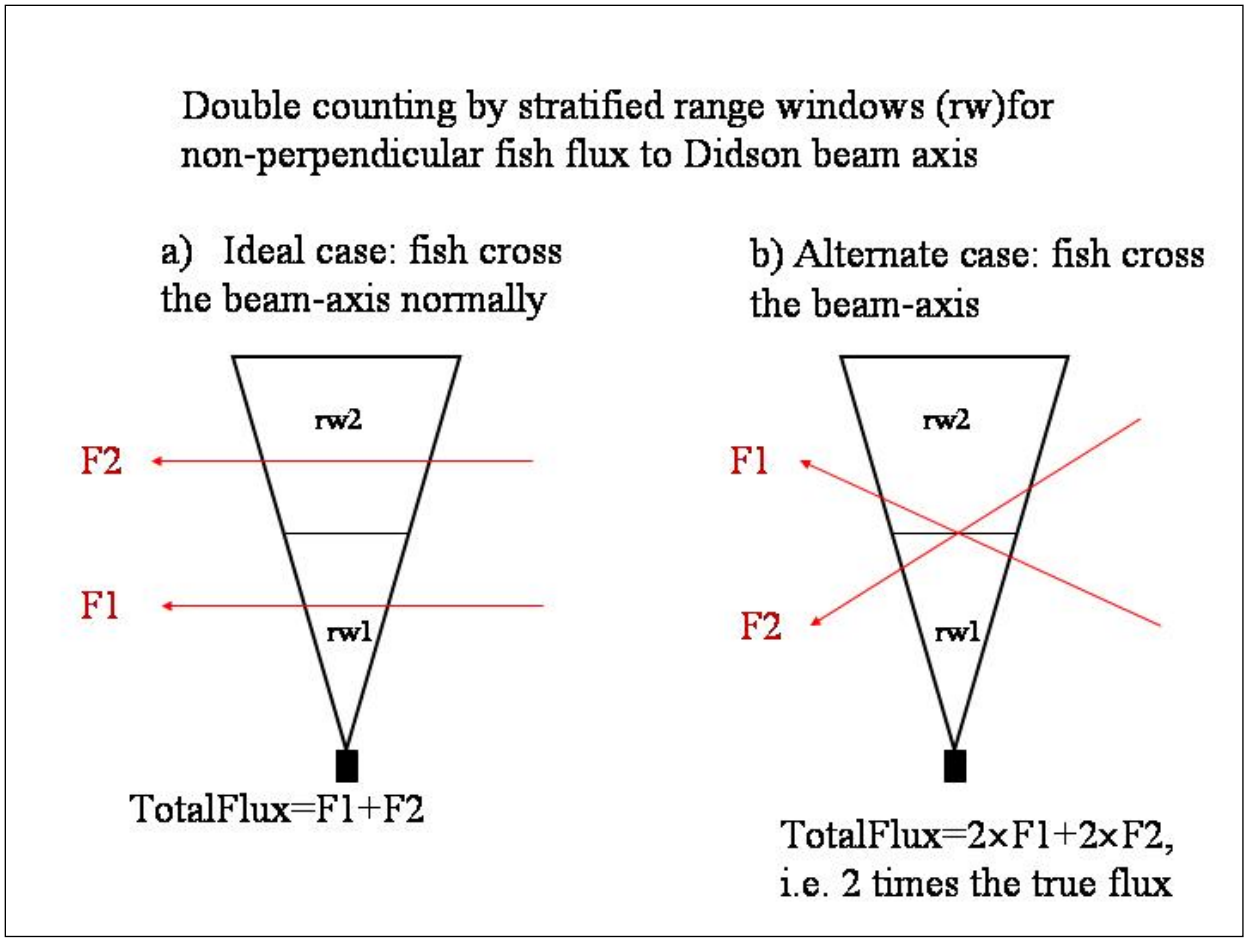

Figure 5. Illustration of fish escapement moving through a fixed location DIDSON imaging sonar configured with one aim and two range windows (rw1 & rw2). a) Two fish tracks (F1 & F2) each passing through only one range window resulting in a correct flux estimate of two, and b) Two fish tracks (F1 & F2) crossing through both range windows potentially resulting in an incorrect double count of four if the counting criteria protocols in Figure 4 are not applied.

Test Fishing

The complete drift series consisted of 6 gill net drifts per day, seven days per week, one 3-drift set in the morning and one 3-drift set in the evening. Each set of 3 drifts was made close to shore along the right bank and directed at capturing salmon. The morning drift series was conducted from 07:00-08:00 and the evening drift series was conducted from 19:00-20:00. The shortening of day length later in the season resulted in evening drifts being moved to an earlier start time (18:00-19:00). Two additional drifts per week, spaced out over the week, were made beyond 25 m from the right bank using the 5¼ inch mesh net to test for presence/absence of migrating salmon in the offshore regions. The mesh sizes used for the drifts included 4, 4 ¾, 5 ¼, 5 ¾, 6 ¾ and 8 inch (stretched mesh, 70 mesh hang, and 30 m length). The morning drifts began on the first day using the 4, 5 ¼, and 6 ¾ inch meshes in sequence, and the evening drifts began using the 4 ¾, 5 ¾ and 8 inch meshes in sequence. On the second day the morning and evening sequences were reversed and on each subsequent day the pattern of drifts was alternated to allow some randomisation of the sampling. Each drift was approximately 4-6 minutes in duration and

began 150 m upstream of the acoustic system and terminated approximately 700 m downstream of the Qualark site.

The date, drift number, mesh size, start and end times were recorded, along with the number of each species of salmon caught in each drift. The number of each species caught in a drift was recorded as retained or released. Fish that were identified by species but escaped were included with the released fish. Sockeye Salmon were retained and Chinook and Coho Salmon were released whenever possible but were retained if dead or survival was deemed to be unlikely. Chinook and Coho Salmon were assessed for adipose condition (present/absent) prior to release. Comments were recorded relating to the success of the drift and any miscellaneous by-catch. Catch from different drifts was kept in separate labelled totes. Test fishing counts by species and drift were verified when the fish were sampled. The test fishing data was compiled daily (for the previous day) and entered into a MS-Excel spreadsheet database. The daily species proportion was determined from the test fishery data and applied to the total upstream flux to estimate daily escapement by species.

Sampling

Sex, post-orbital fork (POF) length (cm), weight (kgs), scale samples and DNA samples (adipose fin punch) from up to 50 Sockeye Salmon per day were taken. All additional Sockeye Salmon were sampled for sex, POF length and weight (kgs). Chinook Salmon were sampled for sex, fork length (FL), weight (kgs) and scales (10 per fish) and were assessed for adipose condition (present/absent). Heads were retained for all fish with clipped adipose fins. Coho Salmon were assessed and sampled in a similar fashion to Chinook Salmon. Up to 50 Pink Salmon per day were sampled for sex, post-orbital hypural (POH) length (cm) and weight (kgs). Starting on September 8, upon the request of PSC, 100 DNA samples per week were taken from Pink Salmon.

Precision

There are two sources of error that affect the precision of the hydroacoustic estimate of total salmon passage. The first source is observer error related to the difference in counts of the same file by different personnel. In order to assess the precision between counters a random number generator was used to select 48 files (8 from each of the 6 range bins) daily to recount. Recounts were conducted by experienced staff. The precision was assessed by calculating the coefficient of variation (CV) and average percent error (APE) between the initial counts and recounted files (Enzenhofer et al., 2010).

$$CV = \sqrt{\frac{\sum_{i=1}^{R}(X_{ij} - \bar{X}_j)^2}{\bar{X}_j^{\,2}}} \quad x \quad 100$$

$$APE = \frac{1}{N}\sum_{j=1}^{N}\left[\frac{1}{R}\sum_{i=1}^{R}\frac{\left|X_{ij} - \bar{X}_j\right|}{\bar{X}_j}\right] \times 100$$

where *N* is the number of events counted by *R* observers, *Xij* is the i^{th} count of the j^{th} event and *Xj* is the average count of the j^{th} event.

CV was used to identify discrepancies between counters on a day to day basis. The discrepancies can help identify personnel that require further training or if there was an error in which files were counted. For example, files from an incorrect date are occasionally erroneously selected from the file directory and counted. APE was used to determine the precision of the entire dataset. Counter precision of files with low abundance presents a problem as the difference of one or two fish between counts can lead to a large and highly variable APE. A weighted mean of the APE from all files that were recounted was used to estimate counter precision for the season. The files with low abundance that make up a minute portion of the sample do not disproportionately weight the precision estimate when using this method.

The second source of error in the precision of the hydroacoustic estimate is temporal error relating to the expansion of the 10 or 20 minute files to represent hourly escapement. No full hour files were collected at Qualark and thus no actual observed estimates of the file expansion error are possible. However, variance of the expanded population estimate for each of the 6 bins was calculated using the following variance estimator (Cochran, 1977).

$$v(Bin_Z) = \frac{N^2 s_Z^2}{n_Z}(1 - f)$$

Where *N* is the total number of 1 hour sample periods, s_Z^2 is the sample variance of the different bins, n_Z is the total time sampled in hours and *f* is the sample fraction (n_z/N). The sample variance was calculated for each of the bins using successive differences between stratified periods of time in this case the variation between the expanded counts over 5 hour periods (Reynolds et al., 2007; Lilja et al., 2008).

$$s_Z^2 = \sum_{i=5}^{N} \frac{(Bin_{Zi}/2 - Bin_{Zi-1} + Bin_{Zi-2} - Bin_{Zi-3} + Bin_{Zi-4}/2)^2}{3.5(N-4)}$$

Bin_{Zi} is the expanded upstream count from bin *Z* on the *i*th hour. This method has been shown to overestimate sample variance (Reynolds et al., 2007). The variance estimates and subsequent calculations of standard deviation and confidence intervals should be positively biased and thus

conservative estimates. The variance in the total salmon passage estimate is determined by summing the components of observer variance and the temporal variance for the 6 different data bins. (Eggers et al., 1995).

In-season Reporting

An estimate of salmon escapement by species was calculated on a daily basis for the previous day's data. Escapement was reported on a bi-weekly basis to the Fraser Panel and technical data users in DFO and PSC. Test fishing catch was sent to PSC on a daily basis and a detailed test fishing report was sent out on a monthly basis. The reports were sent by e-mail using a wireless internet card.

Additional Research

We were able to access an additional acoustic imaging system from DFO during summer 2015. ARIS 1800 (Sound Metrics, 2014) has been developed as a replacement for the DIDSON acoustic imaging systems we currently use at Qualark, but which are becoming obsolete. ARIS 1800 is similar to the standard DIDSON imaging system. It has high frequency (1.8 MHz) and low frequency (1.1MHz) modes and output consists of images created by multiple sound beams focused through a moveable lens giving a field of view that is 14° vertical and 28° horizontal (Sound Metrics, 2014). This equipment access gave us the opportunity to evaluate the technical capabilities of the new ARIS acoustic imaging system and to compare the results obtained with those of the current DIDSON's. The ARIS monitoring conducted was opportunistic and incremental to the standard Qualark DIDSON procedures which were not modified in any way to accommodate ARIS deployment. Following a period of initial evaluation we used the ARIS equipment to monitor salmon migration occurring in two areas of possible concern identified by Pacific Salmon Commission staff in spring/summer 2015 (M. Lapointe, pers. comm.):

- first, we used ARIS to ensonify the RB water column beyond the current 29.17m range using DIDSON. ARIS permitted us to evaluate fish passage occurring between 29 m and 40 m, extending coverage by 40% of current range. While salmon migration has been shown to be highly shore oriented at Qualark during 12 years of monitoring concerns persist that migration may periodically occur outside the standard ensonified zone. ARIS has given us the opportunity to assess these distances at Qualark with acoustic imaging for the first time.
- second, we simultaneously ensonfied RB DIDSONs Bin 1 (4.17-9.17m) using ARIS in 0^o roll aspect as an incremental add-on to DIDSON monitoring. In doing so we attempted to evaluate concerns that DIDSON beam dimensions in -35^o roll aspect created a possible acoustic blind zone at a range of 8-10 m from the transducer (Y. Xie, pers. comm).

The ARIS was affixed to the track-mounted fish deflection weir next to the RB DIDSON using a pole mount with a modified mounting plate. The ARIS was aimed using similar methods employed with the DIDSON, except the ARIS was set at a 0^o roll instead of the -35^o roll employed under normal Qualark operating procedures with the DIDSON. The ARIS was aimed perpendicular to the current flow and thus salmon migration. The tilt was set by moving down

until the bottom image was strong, then moving up until bottom started to disappear, then back down to obtain a good bottom image. This ensures coverage to the bottom while maximizing vertical water column coverage. The tilt was between -18^{o} and -21^{o} with minor alterations made throughout the period of additional research. Files were recorded in LF. These files were taken hourly during the HF DIDSON files to reduce crosstalk interference between the systems.

The ARIS was used to collect files with a range of 10-20m beyond the normal DIDSON range of 29m. From 19 July 2015 to 20 July 2015, files were recorded with a range of 21-50m and duration of 5 minutes. From 4 September 2015 to 11 September 2015, files were recorded with a range of 25-40m and duration of 20 minutes. Limitations of the starting range of the ARIS prevented a starting range of 29.17 m. The files were counted by experienced staff; any fish observed within the normal DIDSON range of 29.17 m were not counted. Counting procedures used for processing DIDSON files were used to process the ARIS files. Sturgeon were easily recognizable and removed from the counts. A minimum size limit of 35 cm was used to remove smaller fish from the ARIS counts. With the -35^{o} rolled DIDSON, the minimum size cut-off for salmon is 30 cm, however the roll makes the fish appear 18% smaller than they actually are so 18% was added to the size cut-off for the ARIS files.

The ARIS was used to simultaneously collect files with the same aim and range as the DIDSON Bin 1 (35^{o} roll; 4.17-9.17 m) except the files were collected at a 0^{o} roll. The ARIS files were collected at LF to reduce the crosstalk between the systems. Files were collected hourly from 12 September 2015 to 15 September 2015. The files were counted by experienced staff using the same counting procedures described above. Once the files were processed the counts from the ARIS and DIDSON were compared for each hour where both files were collected. The 0^{o} rolled ARIS files do not provide as complete vertical coverage as the rolled DIDSON files. Unless there is a large blind spot with the rolled orientation, the ARIS counts should be the same (within counter precision estimates) or less than the DIDSON counts.

Starting 4 August 2015 an alternate drift sequence was initiated for the remainder of the season (Appendix 1). Following a 4 day pattern, the first two mesh sizes in the morning drift series were reversed for day 1 and 2 and normal for day 3 and 4. Evening drift sequences remained unchanged. This data was used to compare size, species and stock composition obtained when drifting the small versus medium mesh size first.

RESULTS

Environmental Conditions

Discharge decreased throughout the project from 5000 m^3/s at the start of the project to 1700 m^3/s near the end of the project (Figure 6). The water temperature varied from 13.0 to 21.0 °C over the course of the project with an extended period of relatively warm mean daily temperatures from early July to the end of August (Figure 6).

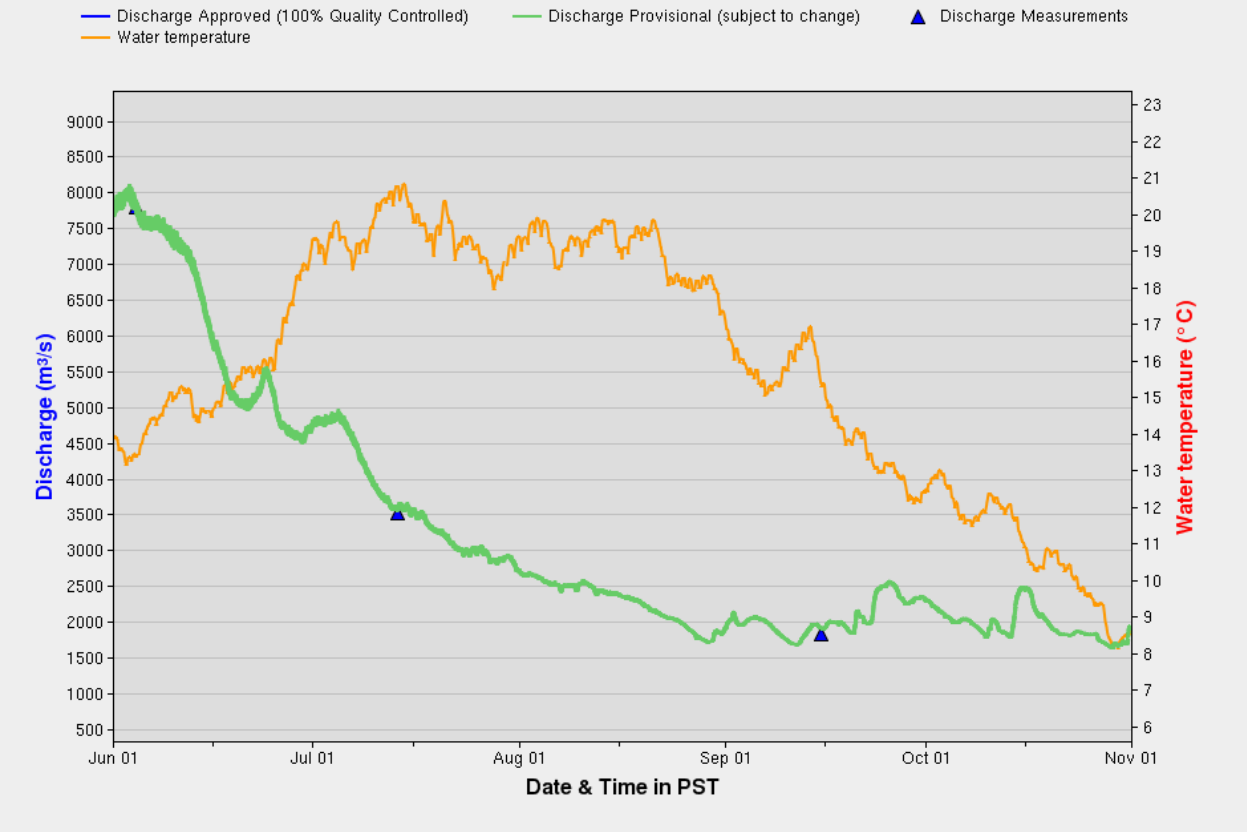

Figure 6. Discharge and water temperature at Qualark hydroacoustic site during the period of operation in 2015 (Environment Canada, 2015).

Total Salmon Escapement Estimate

Operation of the RB DIDSON system was initiated at 11:36 on 28 June 2015 and the LB DIDSON system was started on 29 June 2015 at 10:01. Seasonally low water levels allowed for installation of equipment on both banks at the beginning of the season. RB escapement estimates were used to estimate LB escapement during the short period where only the RB DIDSON was operational. Analysis of data from previous years found approximately equal proportions of total escapement along each bank. The DIDSON systems were shut down on 23 September 2015 (RB at 11:56 and LB at 08:11). The total salmon escapement estimate was 3,334,840 (Figure 7; Appendix 2). The escapement on RB was 1,458,491 representing 44 % of the total estimate. The escapement on LB was 1,876,349 representing the remaining 56 % of the total escapement estimate. Maximum daily salmon escapement occurred on 10 September 2015 at approximately 135,000 fish (Figure 8).

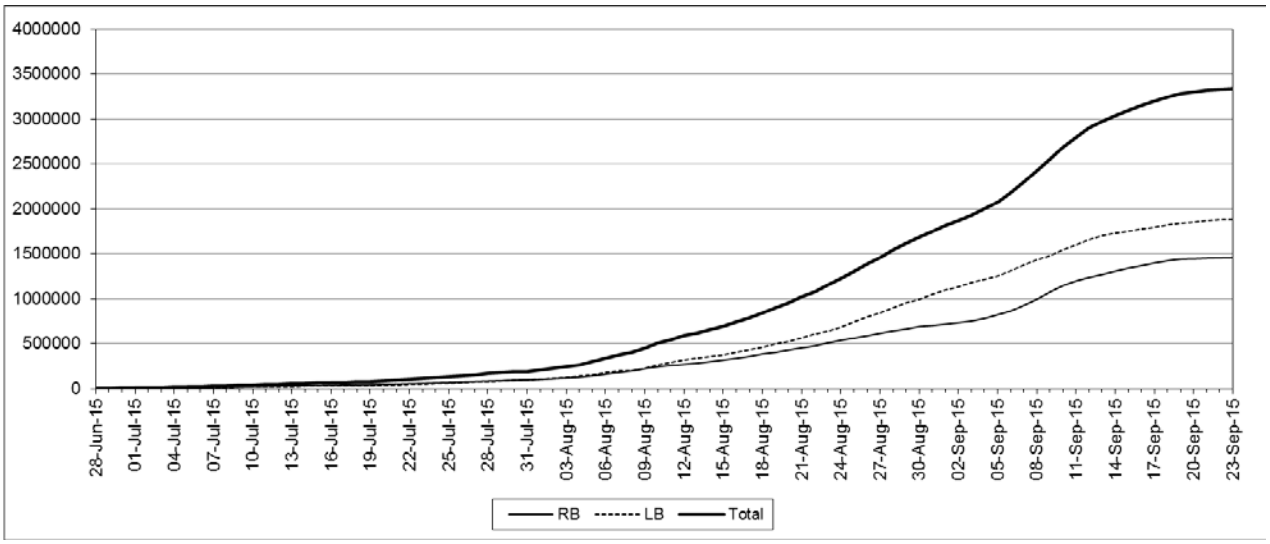

Figure 7. Cumulative daily counts of total salmon escapement derived from DIDSON assessment at Qualark, 2015, including daily cumulative counts by bank.

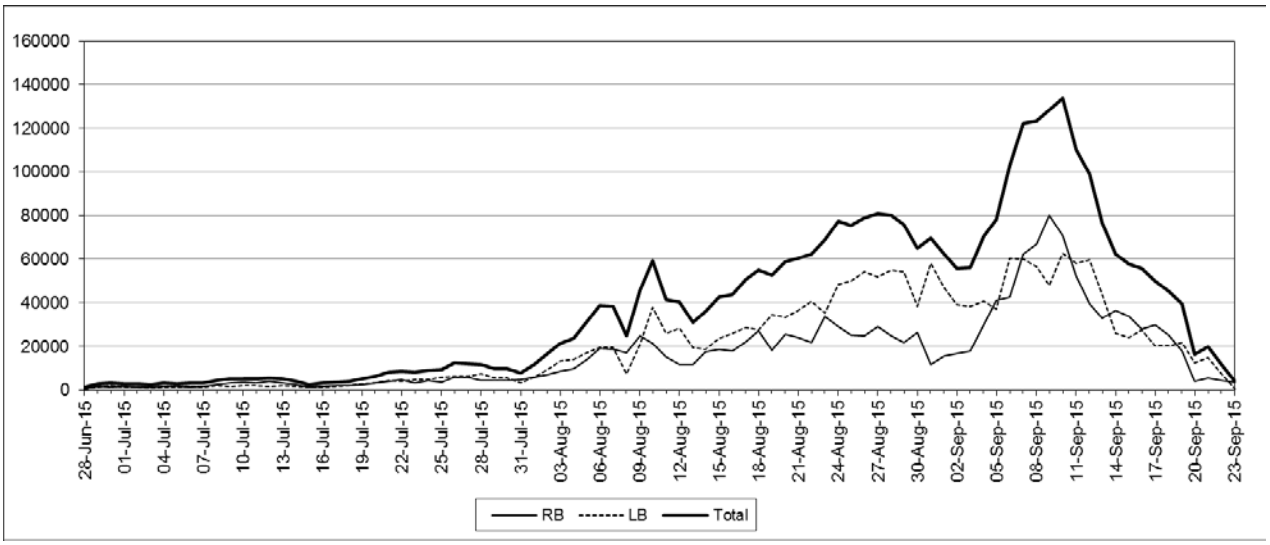

Figure 8. Expanded daily upstream counts of salmon escapement derived from DIDSON assessment at Qualark, 2015, including daily escapement by bank.

Migration Behavior

Approximately 88% of overall migration occurred within 5 m of the end of the fish deflection weirs in 2015 (Table 1). During periods of First Nation set gill net fisheries the proportion of migration beyond the first 5 m increased to 20% on RB and 14% and LB. This is in contrast to 11% on RB and 9% on LB during periods where fisheries were not occurring. Figure 9 illustrates the difference in the proportion of migration occurring offshore (9.17-29.17m) during First Nation set gill net openings in the area of the Qualark site. This marked increase of offshore escapement in response to fisheries has been observed in previous years.

Table 1. Escapement estimates recorded in the 4.17-9.17 m HF range bin compared to the two LF range bins from 9.17-29.17 m at Qualark for 2015. Escapement is divided by bank and period of time.

Period	Bank	Escapement	Bin 1 (4.17–9.17m)	Bin 2 (9.17–19.17m)	Bin 3 (19.17–29.17m)
Jun 28-Sep 23	Both	3,334,840	88%	11%	1%
Jun 28-Sep 23	Right	1,458,491	86%	13%	1%
Jun 28-Sep 23	Left	1,876,349	90%	9%	1%
No nets	Right	1,014,056	89%	11%	0%
No nets	Left	1,372,675	91%	8%	1%
Nets in	Right	444,435	80%	18%	2%
Nets in	Left	503,674	86%	11%	3%

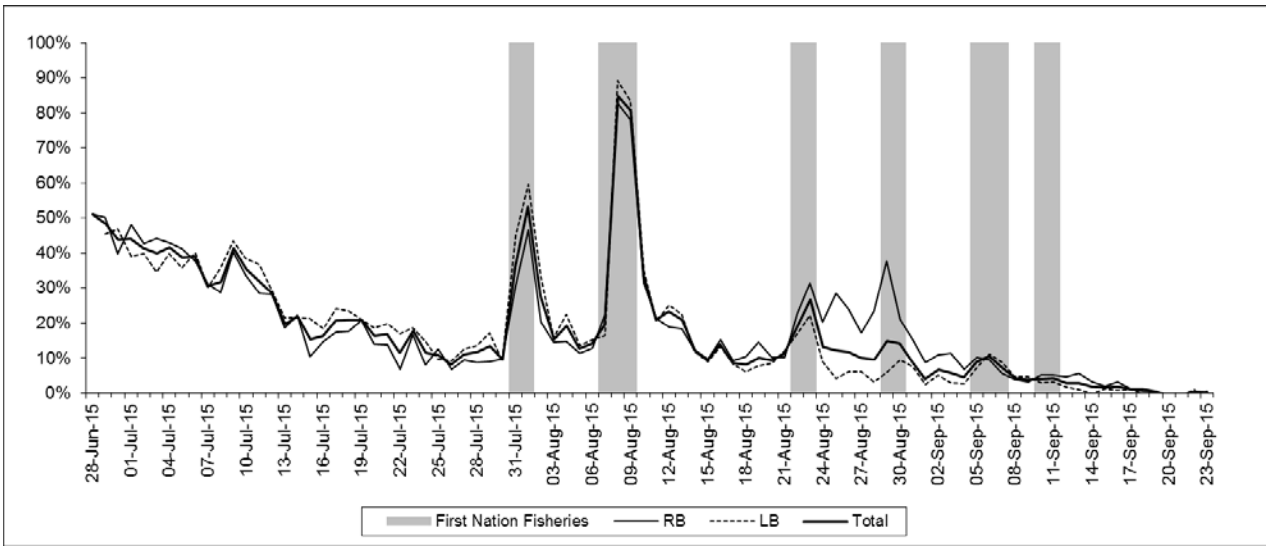

Figure 9. The proportion of daily escapement occurring beyond the first 5 m HF range bin from 9.17 to 29.17 m from the DIDSON at Qualark in 2015. First nation set gill net openings are identified.

No major holding and milling behavior was observed at Qualark in 2015. No offshore migration occurred on RB during September at low water levels in the absence of the influence of First Nation fisheries.

Species Proportioning

The test fishing program was initiated on the morning of 29 June 2015, one day after the hydroacoustic program. Species composition from 29 June 2015 was applied to the hydroacoustic estimate for 28 June 2015. The evening drift series changed from 19:00-20:00 to 18:00-19:00 on 1 September 2015. The test fishing program shut down 22 September 2015, with the hydroacoustic program ending on 23 September 2015. Species proportioning from 22 September 2015 was used to estimate species proportioning on the final partial day of hydroacoustic data collection. Species composition in the test fishing program showed a relatively large proportion of Chinook Salmon throughout the program being the dominant species through most of July and again near the end of the project (Figure 10; Appendix 2).

Sockeye Salmon were the dominant species from late July to the beginning of September. Pink Salmon first appeared in the test fishery on August 11 and were the dominant species for the majority of September. Coho Salmon were first observed on September 6, they comprised only a small component of daily migration until project termination. Appendix 3 contains details of test fishery catches by set.

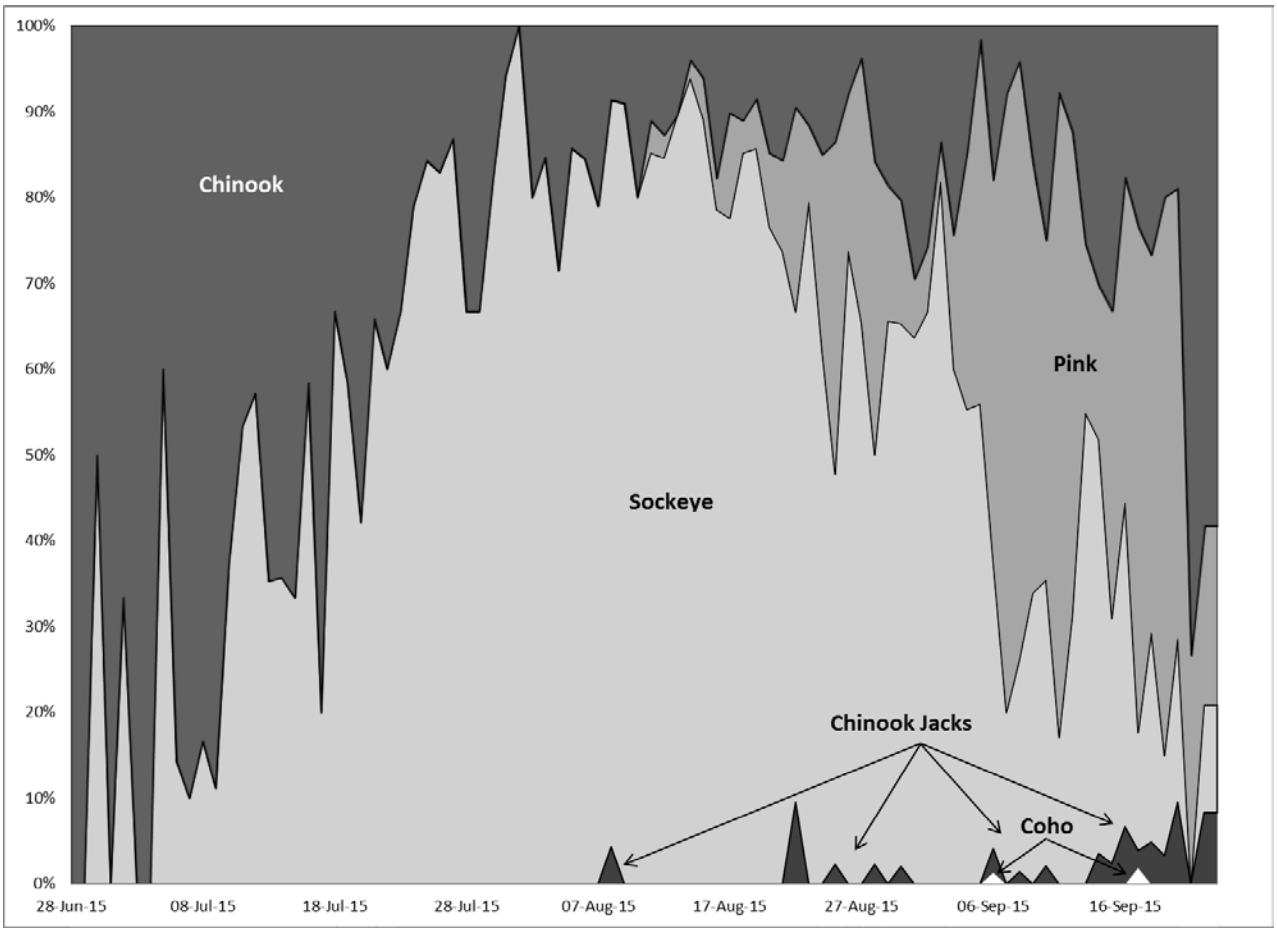

Figure 10. Daily species proportion derived from the test fishery at Qualark, 2015.

Escapement by Species

Sockeye Salmon comprised 55% (1,821,374) of the total salmon escapement at Qualark in 2015 (Figure 11; Appendix 2). Sockeye Salmon were present daily throughout the majority of test fishery operation, comprising just over 30% of daily migration in the first three weeks of July, 75% from the end of July to the beginning of September and 25% in September.

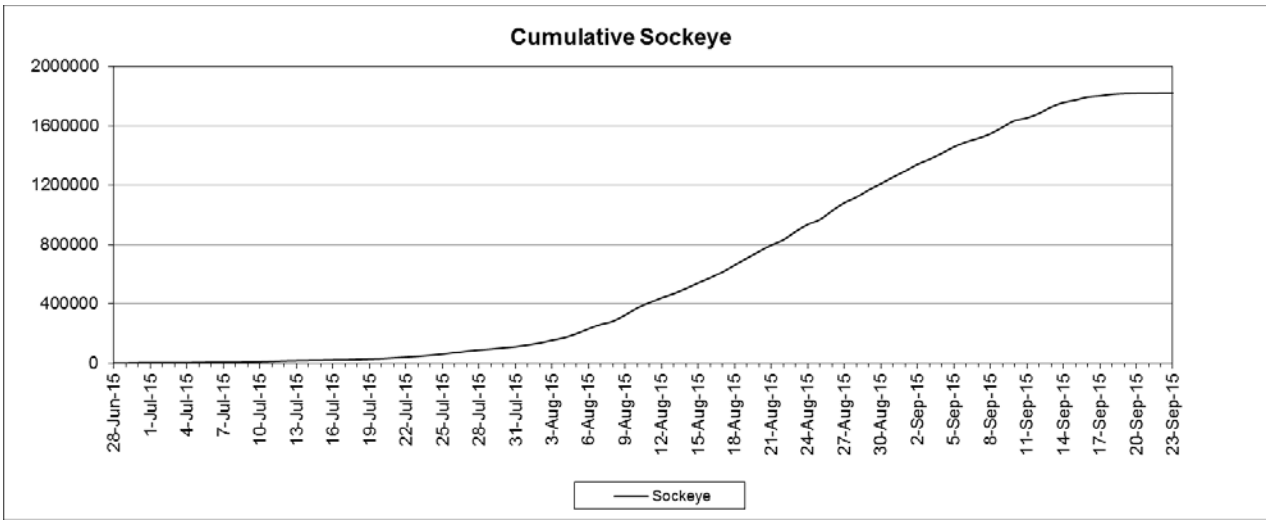

Figure 11. Cumulative daily Sockeye Salmon escapement apportioned by species based on test fishing catch at Qualark, 2015.

The daily abundance of Sockeye Salmon started increasing in the beginning of August (Figure 12; Appendix 2). Daily passage estimates for Sockeye Salmon ranged from 0 during the first week of July as well near the end of the project, to a peak of 58,201 on August 26. A single peak was observed without any marked troughs observed in previous years.

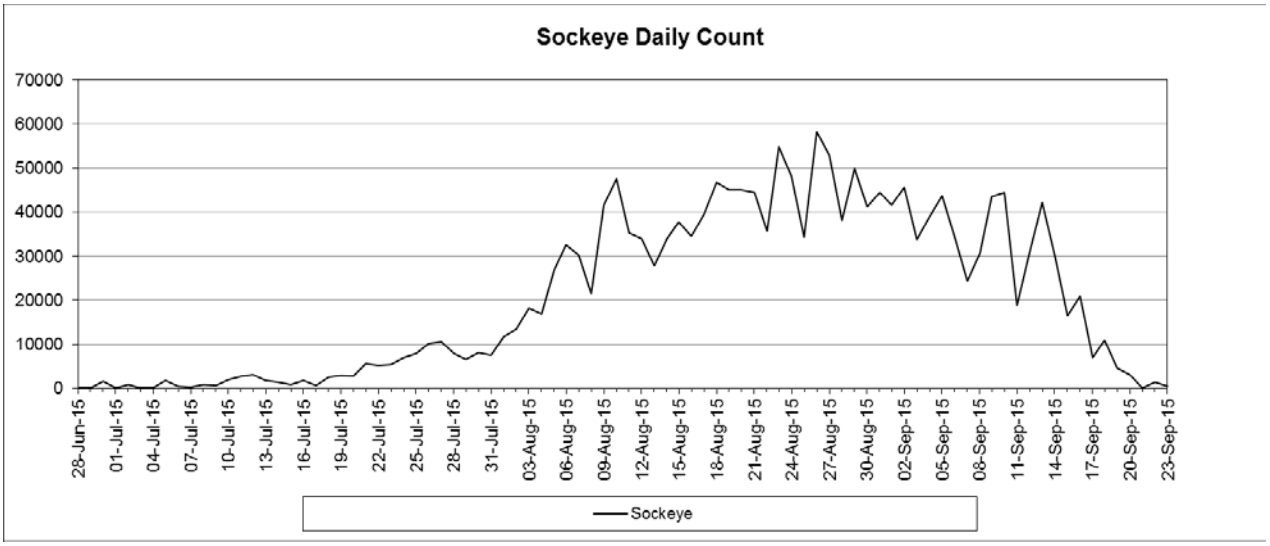

Figure 12. Daily estimates of Sockeye Salmon in the Fraser River at Qualark hydroacoustics site in 2015.

Pink Salmon comprised 27% (894,540) of the total salmon escapement at Qualark in 2015 (Figure 13; Appendix 2). Pink Salmon were first captured in the test fishery on August 11. Pink Salmon represented 10% of total salmon passage through to the beginning of September when they became the dominant species present representing 45% of total salmon passage in September.

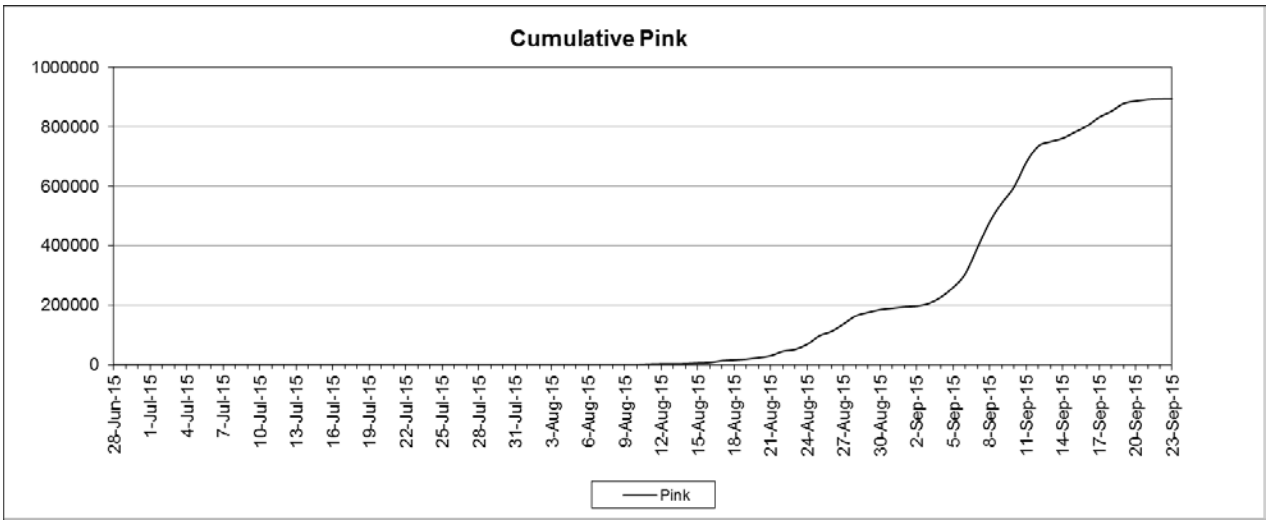

Figure 13. Cumulative daily Pink Salmon escapement apportioned by species based on test fishing catch at Qualark, 2015.

The daily abundance of Pink Salmon started increasing mid-August (Figure 14; Appendix 2). Daily passage estimates for Pink Salmon ranged from 0 through July to mid-August, to a peak of 87,862 on September 7.

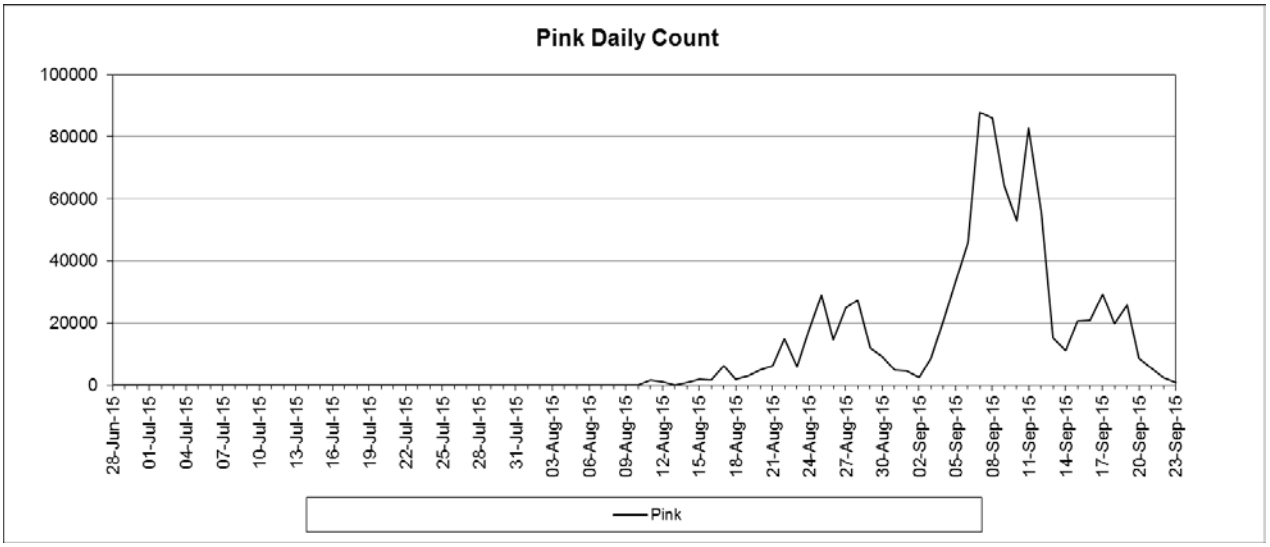

Figure 14. Daily estimates of Pink Salmon in the Fraser River at Qualark hydroacoustic site in 2015.

Chinook Salmon comprised 19% (616,517) of total salmon passage at Qualark in 2015 including an estimated 582,557 adult and 33,960 jacks (Figure 15; Appendix 2). Chinook Salmon were observed almost daily in test fishing catch. Chinook Salmon represented a major component of daily migration through the first 3 weeks of July accounting for 70% of total salmon passage. Through late July and August Chinook Salmon comprised 15% of daily migration. Chinook salmon comprised 30% of the total salmon passage estimate in September.

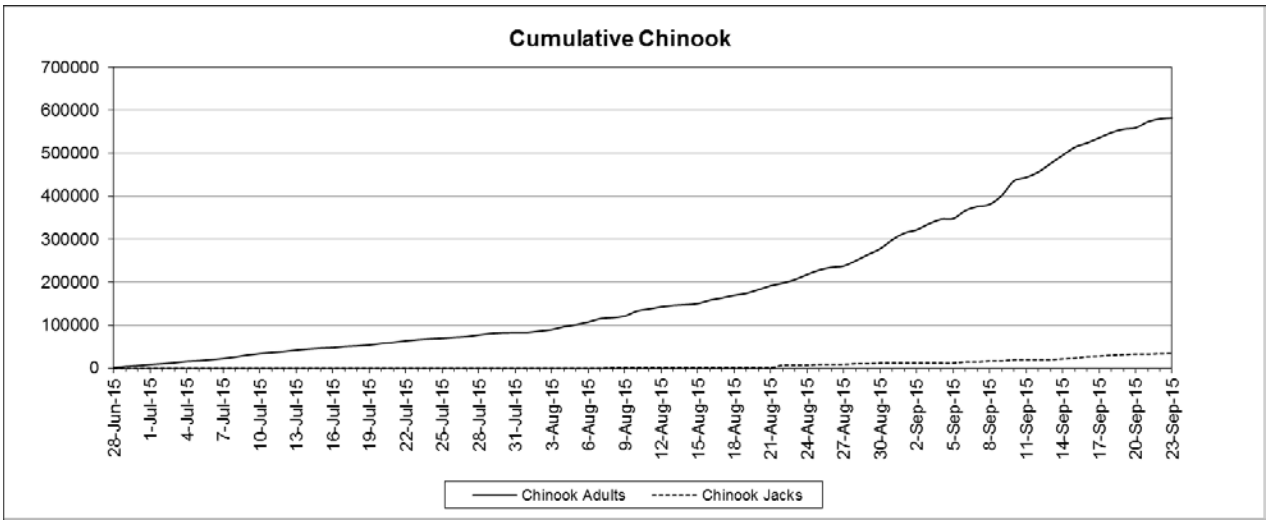

Figure 15. Cumulative daily Chinook Salmon escapement apportioned by species based on test fishing catch at Qualark, 2015.

The daily Chinook Salmon estimate remained relatively stable until September when Pink Salmon escapement increased (Figure 16). Through September there was large variation in the daily estimates. Daily passage estimates for Chinook Salmon ranged from a low of 0 on August 1, to a peak of 36,194 on September 10.

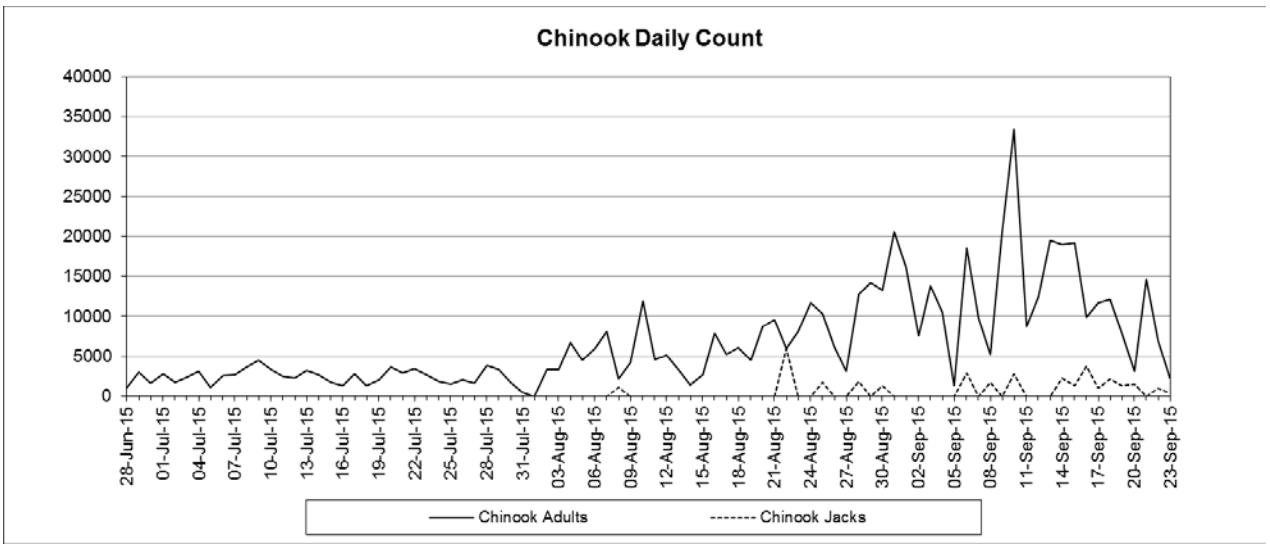

Figure 16. Daily estimates of Chinook Salmon in the Fraser River at Qualark hydroacoustic site in 2015.

Coho Salmon comprised a very minor portion (2,408) of the 2015 Qualark estimate (Appendix 2). Only 2 Coho Salmon were captured in 2015, one was captured on September 6 and the other was captured on September 17.

No Chum or Steelhead salmon were caught in the test fishery in 2015.

Precision

The variances related to the temporal expansion error are documented in Table 2 for each of the 6 different bins at Qualark. The summed total of temporal variance from all bins was 1,286,645,168 (Table 2).

Table 2. Total number of files counted (*N*), total time counted in hours (*n*), unsampled fraction (1-*f*), sample variance (s^2) and variance related to temporal expansion in each of the 6 different bins at Qualark, 2015.

	RB Bin 1	RB Bin 2	RB Bin 3	LB Bin 1	LB Bin 2	LB Bin 3	Total
N	2,084	2,085	2,084	2,080	2,081	2,081	
n	694.7	695.0	347.3	693.3	693.7	346.8	
1 - *f*	0.67	0.67	0.83	0.67	0.67	0.83	
s^2	118,246	3,970	81	179,540	6,094	642	
$v(Bin_z)$	492,849,069	16,556,514	845,270	746,884,718	2,5361,679	6,677,973	1,286,645,168

The number of files recounted two or more times by different staff was 3,116. The escapement in the recounted files accounted for approximately 29% of the total estimated escapement. The total weighted APE associated with observer precision was 1.81% (Table 3). The variance related to observer error was calculated to be 3,657,658,005.

Table 3. Observer, temporal and total error, standard deviation and variance at Qualark 2015, including calculated 95% confidence intervals on the total salmon escapement estimate.

	Observer	Temporal	Total
Error	0.018	0.011	0.021
SD	60,479	35,870	70,316
Variance	3,657,658,005	1,286,645,168	4,944,303,173
Total Population			3,334,840
±95% CI			137,819
Lower 95% CI			3,197,021
Upper 95% CI			3,472,658
Percent Relative Error			4.13%

The total summed variance of the observer and temporal error was 4,944,303,173 (Table 3). The 95% confidence interval on total salmon passage was calculated to be ±137,819 salmon. The upper 95% confidence interval was 3,197,021 and the lower 95% confidence interval was 3,472,658.

Additional Research

From 19 July 2015 to 20 July 2015, 36 long range ARIS (25-40m) files were recorded. No fish were observed in these files. From 4 September 2015 to 11 September 2015, 139 long range ARIS files were recorded. Two salmon sized targets were observed in the range beyond 29.17m. Both these targets were moving in an upstream direction. The total expanded salmon escapement from 29-40m during the recorded period was estimated to be 6 salmon. The total salmon escapement during this period in the normal DIDSON range on RB was in excess of

400,000. Sturgeon were observed in the files but were not counted. Some salmon sized targets were observed within the normal DIDSON coverage of 29.17m and were not included in the expanded count.

A total of 87 ARIS (0^o roll, 4.17-9.17m) files were collected simultaneously with the DIDSON Bin1 (-35^o roll, 4.17-9.17m) files over a period of four days from 12 September 2015 to 15 September 2015. The total expanded salmon escapement in the ARIS files was 120,225 compared to 123,024 in the DIDSON files. Expanded hourly salmon escapement derived from ARIS and DIDSON files and the difference between ARIS and DIDSON is illustrated in Figure 17. The average difference between the hourly expanded salmon escapement in ARIS and DIDSON files was -30 fish. The weighted average percent error between the ARIS and DIDSON counts was 2.18%.

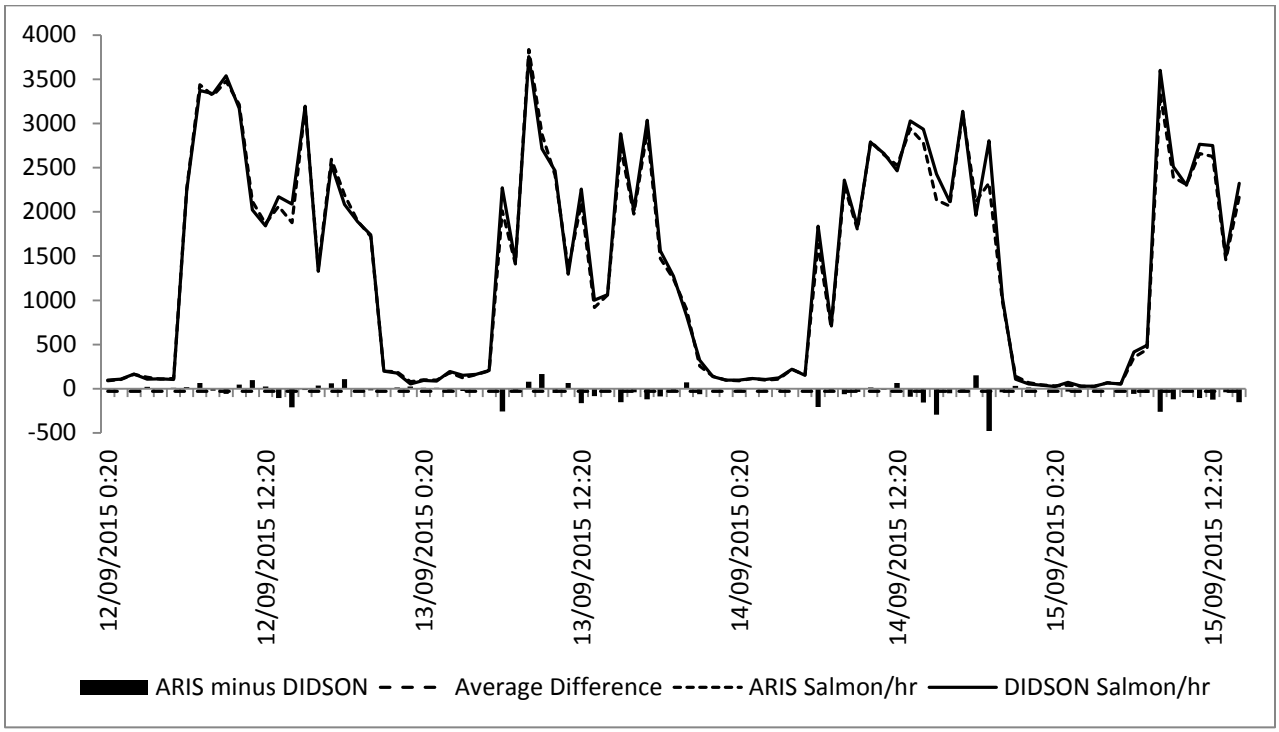

Figure 17. Hourly expanded salmon counts from simultaneously recorded ARIS (0^o roll, 4.17-9.17m) and DIDSON (-35^o roll, 4.17-9.17m) files from 12 September 2015 to 15 September 2015 at Qualark including the hourly and average difference between the ARIS and DIDSON counts.

The analysis of the differences in size, species and stock composition of the alternate drift sequences is awaiting the completion of DNA sample processing. Results are pending.

DISCUSSION

The DIDSON hydroacoustic program at Qualark produces daily in-season estimates of salmon escapement in the Fraser River near Hope, BC. Daily escapement estimates at Qualark

can be produced regardless of discharge and procedures do not change throughout the duration of the project. In 2015, the total escapement was estimated as 3,334,640 ± 137,819 salmon. The lower 95% confidence interval was 3,197,021 salmon; the upper 95% confidence interval was 3,472,658 salmon.

Hydroacoustic coverage of the area that salmon migrate within is complete at Qualark. The bottom of the ensonified area has been modified resulting in an acoustically non-reflective planar profile. There are no shelves or scalloped areas that create acoustic shadowing that could potentially obscure salmon escapement. The -35^{o} roll angle is utilized to maximize vertical coverage of the water column. The results of testing estimated vertical water column sampling coverage on RB to be from the substrate to 42 cm below the surface, on LB coverage is to within 20 cm from the surface. These measurements were collected from the weir approximately 4 m from the DIDSON. Beam spread beyond this point will further increase coverage as distance from the DIDSON increases. On-site testing has shown that salmon rarely migrate this close to the surface. Migration occurs primarily within 5 meters of the end of the fish deflection weir due to fast, strong flow in mid-river and slower seams of water along the banks. The absence of migration beyond the area of coverage is further supported by the very minimal escapement (~1%) observed in the 19.17-29.17 m range bin (Bin3) and lack of catch in the bi-weekly offshore drifts.

The bank-oriented migratory behavior allows for the collection of high quality 5 m HF DIDSON files that contain the vast majority of the salmon migration, 88% in 2015. The directed upstream migratory behavior combined with the high image quality maximizes the accuracy and precision of the counts. Counting protocols address potential biases associated with fish crossing between range bins. Minimum length requirements remove smaller native fish from the counts.

In 2014, a number of interesting migratory behaviors were observed at Qualark. Particularly noteworthy was anomalous migration beyond Bin1on RB during late September. Additionally, holding and milling behavior was observed periodically at night time on RB from the end of August through to the end of September. In contrast no major holding or milling behaviors were observed in 2015, and there was no marked migration observed beyond Bin1, except during periods when First Nation Fisheries were occurring. In previous years, First Nations set gill net fisheries occurring near the site have consistently elicited a similar response from migrating salmon, regardless of discharge level. The most notable difference between 2015 and previous years was the difference in the proportion of salmon passage that was observed on each bank. In 2015, 44% of passage was on RB and 56% was on LB. In previous years, the proportion by bank, though variable on a day to day basis, was close to 50% on each bank overall. There was no obvious explanation for this change in behavior.

Migration continues at night during Sockeye and Chinook Salmon dominated periods albeit at much reduced levels compared to daytime passage. In July and August 2015, 77% of migration occurred during daytime (0600-2000 hrs) with 23% at night (2100-0500 hrs). In contrast, during Pink Salmon dominant periods the migration virtually creases during hours of darkness. In September 2015, the Pink Salmon dominant period, the overall percentage of daytime (0600-2000 hrs) migration was 96% compared to only 4% occurring at night (2100-0500 hrs).

The total daily salmon escapement is proportioned by species based on the direct proportion of each caught in the daily test fishery. The emphasis from a management perspective is on Sockeye Salmon. The total salmon escapement estimate at Qualark in 2015 was 3,334,640 consisting of, 1,821,374 Sockeye, 616,517 Chinook including 33,960 jacks, 894,540 Pink and 2,408 Coho salmon. Despite the high quality of the acoustically derived total salmon escapement estimate and the test fishing being conducted at the location of hydroacoustic site, the representativeness of species proportioning may introduce uncertainty due to small sample sizes in test fishing catch relative to total passage. In addition, the species apportioning procedures applied assume constant catchability through time and by species, if catchability varies, then application of direct proportional expansion may introduce species composition bias. We are investigating methods to account for differences in species specific vulnerability to the fishing gear to improve the species estimates and reduce sampling induced bias effects. This work is ongoing and will be reported on in the future.

Utility of the next generation ARIS was assessed as it will soon be replacing DIDSON which is no longer manufactured. There were a number of challenges encountered with the ARIS. The manufacturer confirmed the advanced timer recording was not yet functional, making set-up of the standard Qualark recording regime nearly impossible. The basic recording function does not allow flexibility in start times for 20 minute files. It only allows for start times of 0 minutes, 20 minutes and 40 minutes of each hour. The standard Qualark file start times on RB are 0 minutes, 15 minutes, 36 minutes of each hour. In order to get a 20 minute file with a start time of 15 minutes past the hour it was necessary to offset the ARIS computer clock by 5 minutes. Additionally there were problems with the silt plugs trapping air inside the unit causing poor image quality. The image quality was not good throughout the experimentation: we noted excessive arcing on salmon targets; poor bottom image; and numerous technical “glitches” when the system shutdown for no apparent reason. The file size from ARIS is much larger than DIDSON requiring much more data storage capacity. Lastly, the ARIS Fish program used to view recorded files requires additional development to improve user friendliness. The advantages of the ARIS are the increased flexibility in start ranges and bin size. Additionally the LF ARIS files can be recorded with 96 beams instead of 48 beams with the DIDSON so theoretically longer range and larger bins should have better image quality though this was not observed. Overall the image quality was poorer than that of the aging DIDSON systems and numerous other problems with the software functionality made use of the ARIS difficult.

Despite these challenges, we were able to explore, in a limited manner, whether salmon passage was occurring beyond the normal DIDSON coverage 29.17m, in 2015 using ARIS. Flow is fast in the middle of the river relative to the banks which have seams of slower flow within the ensonified area. Salmon exhibit high fidelity to moving through the near shore area with slower flow due to reduced energetic requirements. This is behavior is readily apparent within the DIDSON’s range stratified files. Approximately 90% of all the salmon migration was observed in Bin1 (4.17-9.17m). The remaining 10% moved in Bin2 (9.17-19.17m), with only 0.1% of total migration occuring in Bin3 (19.17-29.17m) this year. External stimuli (Qualark drift gill net test fishery and First Nation set net fisheries) repeatedly cause a higher proportion of salmon to shift their migration offshore at Qualark. This shift is no greater than 3-5 m beyond normal distribution and sees temporally limited elevation in Bin2 counts. There is no evidence that

salmon move off beyond the 30m ensonified area during these periods. Very low proportions move out as far as Bin3. In all cases as soon as external stimuli are removed the fish immediately respond by resuming their highly on-shore oriented behavior. Migration occurring beyond the regularly ensonified zone has been assessed using bi-weekly offshore gillnet drifts since 2008. A30m gillnet is drifted just beyond the outboard edge of the ensonified area, sweeping a range of 30-60m offshore to evaluate salmon presence there. Over the 8 year period of operation there have been a total of three salmon caught in these offshore drifts. Additionally, DFO's Applied Technologies group transected the river during the initial set up of the operation in the late 90's to determine if there was passage in the middle of the river. They used splitbeam hydroacoustic distribution plots to show that salmon migration was highly shore oriented: minimal or no passage was seen outside the normally ensonified area (30m).

Our work in 2015, using long range ARIS files further reinforces the extremely low passage occurring beyond the normal range of coverage. The 25-40m ARIS files recorded in September coincided with the peak of salmon passage as well as seasonally low water conditions (Figures 6 and 18). A limited effort First Nations hot pick Chinook fishery occurred from September 5-7 and September 10-11 (Figure 9). High passage coinciding with low water periods may present conditions when salmon could migrate further offshore. First Nation fisheries have been shown to push salmon further offshore. While the range of relative abundance and number of days monitored using ARIS in long range was low in 2015 there was no indication that there was any meaningful abundance migrating beyond 29m. This ARIS monitoring supports the general conclusion that only a very small fraction of both the daily and total salmon migration occurs beyond 20m distance from the transducer on either side of the Fraser River at Qualark. Salmon migration occurring beyond 20 m on either bank of the Fraser at Qualark, monitored or not, will not contribute a significant source of potential bias to annual estimation.

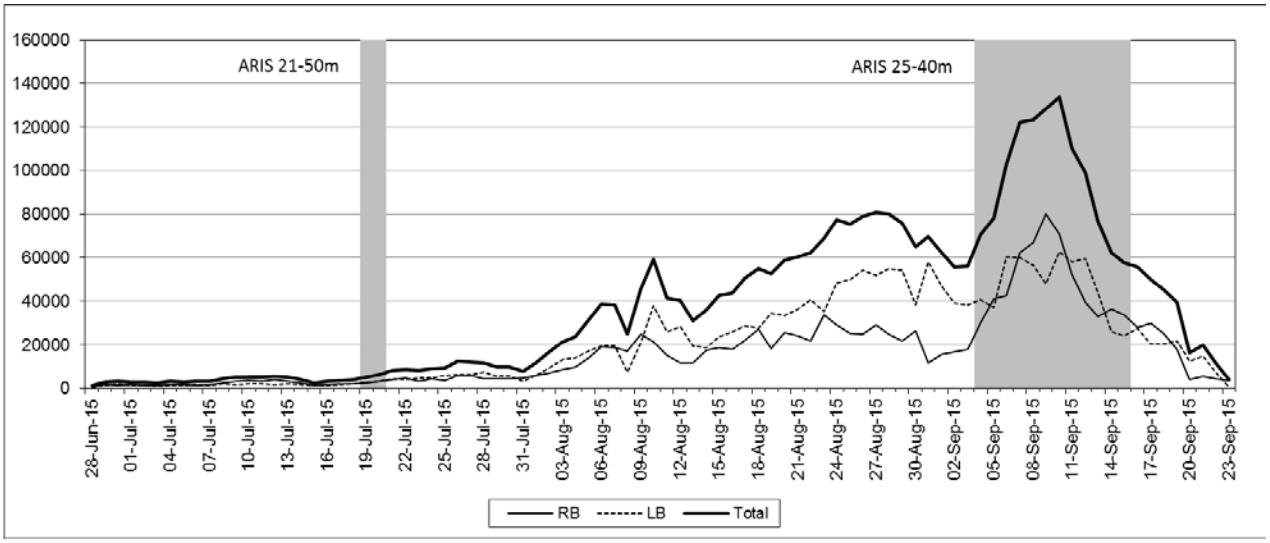

Figure 18. Daily salmon escapement and periods of data collection of long range (29-40m) ARIS files at Qualark in 2015.

Our evaluation of the effect of the single DIDSON aim (-35^{o} roll), employed as the standard configuration at Qualark since 2008, involved simulataneous data collection using

ARIS. Concern that the DIDSON beam geometry could create a near-bottom blind spot at approximately 8m from the lens when rolled was explored. ARIS was used to simultaneously collect files with the same aim as DIDSON Bin 1 except we employed a 0^{o} roll for ARIS. If blind spots were present near the bottom then the ARIS with a flat orientation would produce higher estimates than a rolled DIDSON. The ARIS and DIDSON counts showed similar hourly expanded salmon estimates with the average difference between ARIS and DIDSON counts being -30 salmon on hourly estimates that were on average 1500 salmon: DIDSON counts were slightly higher (~2%) than the ARIS counts. The weighted average percent error between ARIS and DIDSON was 2.18%, similar to the weighted average percent observer error between DIDSON files counted by different staff (1.81%) indicating that the difference between the ARIS and DIDSON estimates was most likely due to observer error in processing the data files. Regardless, there was no indication of any blind spots near the bottom and through which large numbers of fish were moving undetected by DIDSON due to its rolled aim. On the contrary, the closeness of the counts derived from the 2 systems suggests no issues with enumerating salmon at Qualark using a single rolled aim with DIDSON.

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APPENDICES

Appendix 1. Alternate drift sequence employed at Qualark from August 4 to October 2, 2015.

	AM Drift Sequence				PM Drift Sequence		
Date	**1**	**2**	**3**	**Offshore**	**4**	**5**	**6**
01-Aug-15							
02-Aug-15							
03-Aug-15							
04-Aug-15	5 3/4	4 3/4	8		4	5 1/4	6 3/4
05-Aug-15	5 1/4	4	6 3/4		4 3/4	5 3/4	8
06-Aug-15	4 3/4	5 3/4	8	5 1/4	4	5 1/4	6 3/4
07-Aug-15	4	5 1/4	6 3/4		4 3/4	5 3/4	8
08-Aug-15	5 3/4	4 3/4	8		4	5 1/4	6 3/4
09-Aug-15	5 1/4	4	6 3/4		4 3/4	5 3/4	8
10-Aug-15	4 3/4	5 3/4	8	5 1/4	4	5 1/4	6 3/4
11-Aug-15	4	5 1/4	6 3/4		4 3/4	5 3/4	8
12-Aug-15	5 3/4	4 3/4	8		4	5 1/4	6 3/4
13-Aug-15	5 1/4	4	6 3/4	5 1/4	4 3/4	5 3/4	8
14-Aug-15	4 3/4	5 3/4	8		4	5 1/4	6 3/4
15-Aug-15	4	5 1/4	6 3/4		4 3/4	5 3/4	8
16-Aug-15	5 3/4	4 3/4	8		4	5 1/4	6 3/4
17-Aug-15	5 1/4	4	6 3/4	5 1/4	4 3/4	5 3/4	8
18-Aug-15	4 3/4	5 3/4	8		4	5 1/4	6 3/4
19-Aug-15	4	5 1/4	6 3/4		4 3/4	5 3/4	8
20-Aug-15	5 3/4	4 3/4	8	5 1/4	4	5 1/4	6 3/4
21-Aug-15	5 1/4	4	6 3/4		4 3/4	5 3/4	8
22-Aug-15	4 3/4	5 3/4	8		4	5 1/4	6 3/4
23-Aug-15	4	5 1/4	6 3/4		4 3/4	5 3/4	8
24-Aug-15	5 3/4	4 3/4	8	5 1/4	4	5 1/4	6 3/4
25-Aug-15	5 1/4	4	6 3/4		4 3/4	5 3/4	8
26-Aug-15	4 3/4	5 3/4	8		4	5 1/4	6 3/4
27-Aug-15	4	5 1/4	6 3/4	5 1/4	4 3/4	5 3/4	8
28-Aug-15	5 3/4	4 3/4	8		4	5 1/4	6 3/4
29-Aug-15	5 1/4	4	6 3/4		4 3/4	5 3/4	8
30-Aug-15	4 3/4	5 3/4	8		4	5 1/4	6 3/4
31-Aug-15	4	5 1/4	6 3/4	5 1/4	4 3/4	5 3/4	8

Appendix 1 cont.

	AM Drift Sequence				PM Drift Sequence		
Date	**1**	**2**	**3**	**Offshore**	**4**	**5**	**6**
01-Sep-15	5 3/4	4 3/4	8		4	5 1/4	6 3/4
02-Sep-15	5 1/4	4	6 3/4		4 3/4	5 3/4	8
03-Sep-15	4 3/4	5 3/4	8	5 1/4	4	5 1/4	6 3/4
04-Sep-15	4	5 1/4	6 3/4		4 3/4	5 3/4	8
05-Sep-15	5 3/4	4 3/4	8		4	5 1/4	6 3/4
06-Sep-15	5 1/4	4	6 3/4		4 3/4	5 3/4	8
07-Sep-15	4 3/4	5 3/4	8	5 1/4	4	5 1/4	6 3/4
08-Sep-15	4	5 1/4	6 3/4		4 3/4	5 3/4	8
09-Sep-15	5 3/4	4 3/4	8		4	5 1/4	6 3/4
10-Sep-15	5 1/4	4	6 3/4	5 1/4	4 3/4	5 3/4	8
11-Sep-15	4 3/4	5 3/4	8		4	5 1/4	6 3/4
12-Sep-15	4	5 1/4	6 3/4		4 3/4	5 3/4	8
13-Sep-15	5 3/4	4 3/4	8		4	5 1/4	6 3/4
14-Sep-15	5 1/4	4	6 3/4	5 1/4	4 3/4	5 3/4	8
15-Sep-15	4 3/4	5 3/4	8		4	5 1/4	6 3/4
16-Sep-15	4	5 1/4	6 3/4		4 3/4	5 3/4	8
17-Sep-15	5 3/4	4 3/4	8	5 1/4	4	5 1/4	6 3/4
18-Sep-15	5 1/4	4	6 3/4		4 3/4	5 3/4	8
19-Sep-15	4 3/4	5 3/4	8		4	5 1/4	6 3/4
20-Sep-15	4	5 1/4	6 3/4		4 3/4	5 3/4	8
21-Sep-15	5 3/4	4 3/4	8	5 1/4	4	5 1/4	6 3/4
22-Sep-15	5 1/4	4	6 3/4		4 3/4	5 3/4	8
23-Sep-15	4 3/4	5 3/4	8		4	5 1/4	6 3/4
24-Sep-15	4	5 1/4	6 3/4	5 1/4	4 3/4	5 3/4	8
25-Sep-15	5 3/4	4 3/4	8		4	5 1/4	6 3/4
26-Sep-15	5 1/4	4	6 3/4		4 3/4	5 3/4	8
27-Sep-15	4 3/4	5 3/4	8		4	5 1/4	6 3/4
28-Sep-15	4	5 1/4	6 3/4	5 1/4	4 3/4	5 3/4	8
29-Sep-15	5 3/4	4 3/4	8		4	5 1/4	6 3/4
30-Sep-15	5 1/4	4	6 3/4		4 3/4	5 3/4	8
01-Oct-15	4 3/4	5 3/4	8	5 1/4	4	5 1/4	6 3/4
02-Oct-15	4	5 1/4	6 3/4		4 3/4	5 3/4	8

Appendix 2. Daily total and cumulative salmon escapement by bank, daily catch, daily species proportions and daily and cumulative escapement by species from Qualark hydroacoustic and test fishing programs in 2015.

	Total Expanded Daily Count			Cumulative Daily Count			Daily Catch						Species Proportion					Daily Species Count					Cumulative Species Count				
Date	RB	LB	Total	RB	LB	Total	Sockeye	Chinook	Chinook Jacks	Coho	Pink	Total	Sockeye	Chinook Adults	Chinook Jacks	Coho	Pink	Sockeye	Chinook Adults	Chinook Jacks	Coho	Pink	Sockeye	Chinook Adults	Chinook Jacks	Coho	Pink
28-Jun-15	540	540	1080	540	540	1080						0	0.00	1.00	0.00	0.00	0.00	0	1080	0	0	0	0	1080	0	0	0
29-Jun-15	1803	1164	2967	2343	1704	4047	0	2	0	0	0	2	0.00	1.00	0.00	0.00	0.00	0	2967	0	0	0	0	4047	0	0	0
30-Jun-15	1389	1851	3240	3732	3555	7287	1	1	0	0	0	2	0.50	0.50	0.00	0.00	0.00	1620	1620	0	0	0	1620	5667	0	0	0
1-Jul-15	1556	1272	2828	5288	4827	10115	0	3	0	0	0	3	0.00	1.00	0.00	0.00	0.00	0	2828	0	0	0	1620	8495	0	0	0
2-Jul-15	1374	1304	2678	6662	6131	12792	2	4	0	0	0	6	0.33	0.67	0.00	0.00	0.00	893	1785	0	0	0	2513	10280	0	0	0
3-Jul-15	1320	1050	2370	7982	7181	15162	0	5	0	0	0	5	0.00	1.00	0.00	0.00	0.00	0	2370	0	0	0	2513	12650	0	0	0
4-Jul-15	1763	1314	3077	9745	8495	18239	0	7	0	0	0	7	0.00	1.00	0.00	0.00	0.00	0	3077	0	0	0	2513	15727	0	0	0
5-Jul-15	1582	1269	2851	11326	9764	21090	3	2	0	0	0	5	0.60	0.40	0.00	0.00	0.00	1711	1140	0	0	0	4223	16867	0	0	0
6-Jul-15	1218	1794	3012	12544	11558	24102	1	6	0	0	0	7	0.14	0.86	0.00	0.00	0.00	430	2582	0	0	0	4653	19449	0	0	0
7-Jul-15	1671	1341	3012	14215	12899	27114	1	9	0	0	0	10	0.10	0.90	0.00	0.00	0.00	301	2711	0	0	0	4954	22159	0	0	0
8-Jul-15	2466	1857	4323	16681	14756	31437	1	5	0	0	0	6	0.17	0.83	0.00	0.00	0.00	721	3603	0	0	0	5675	25762	0	0	0
9-Jul-15	3342	1722	5064	20023	16478	36501	1	8	0	0	0	9	0.11	0.89	0.00	0.00	0.00	563	4501	0	0	0	6238	30263	0	0	0
10-Jul-15	3386	1902	5288	23409	18380	41788	3	5	0	0	0	8	0.38	0.63	0.00	0.00	0.00	1983	3305	0	0	0	8220	33568	0	0	0
11-Jul-15	3003	2214	5217	26412	20594	47005	8	7	0	0	0	15	0.53	0.47	0.00	0.00	0.00	2782	2435	0	0	0	11003	36002	0	0	0
12-Jul-15	3834	1575	5409	30246	22169	52414	8	6	0	0	0	14	0.57	0.43	0.00	0.00	0.00	3091	2318	0	0	0	14094	38321	0	0	0
13-Jul-15	3030	1989	5019	33276	24158	57433	6	11	0	0	0	17	0.35	0.65	0.00	0.00	0.00	1771	3248	0	0	0	15865	41568	0	0	0
14-Jul-15	2507	1618	4124	35782	25775	61558	5	9	0	0	0	14	0.36	0.64	0.00	0.00	0.00	1473	2651	0	0	0	17338	44220	0	0	0
15-Jul-15	1413	1140	2553	37195	26915	64111	2	4	0	0	0	6	0.33	0.67	0.00	0.00	0.00	851	1702	0	0	0	18189	45922	0	0	0
16-Jul-15	1686	1386	3072	38882	28301	67183	7	5	0	0	0	12	0.58	0.42	0.00	0.00	0.00	1792	1280	0	0	0	19981	47202	0	0	0
17-Jul-15	1850	1700	3550	40731	30002	70733	2	8	0	0	0	10	0.20	0.80	0.00	0.00	0.00	710	2840	0	0	0	20691	50041	0	0	0
18-Jul-15	1838	2052	3890	42569	32054	74622	6	3	0	0	0	9	0.67	0.33	0.00	0.00	0.00	2593	1297	0	0	0	23284	51338	0	0	0
19-Jul-15	2262	2808	5070	44831	34862	79692	7	5	0	0	0	12	0.58	0.42	0.00	0.00	0.00	2958	2113	0	0	0	26242	53450	0	0	0
20-Jul-15	3222	3060	6282	48053	37922	85974	8	11	0	0	0	19	0.42	0.58	0.00	0.00	0.00	2645	3637	0	0	0	28887	57087	0	0	0
21-Jul-15	4038	4364	8402	52091	42285	94376	27	14	0	0	0	41	0.66	0.34	0.00	0.00	0.00	5533	2869	0	0	0	34419	59956	0	0	0
22-Jul-15	4660	4039	8699	56751	46324	103075	12	8	0	0	0	20	0.60	0.40	0.00	0.00	0.00	5219	3480	0	0	0	39639	63436	0	0	0
23-Jul-15	3328	4899	8227	60079	51223	111302	10	5	0	0	0	15	0.67	0.33	0.00	0.00	0.00	5485	2742	0	0	0	45124	66178	0	0	0
24-Jul-15	4284	4570	8854	64363	55793	120156	15	4	0	0	0	19	0.79	0.21	0.00	0.00	0.00	6990	1864	0	0	0	52114	68042	0	0	0
25-Jul-15	3563	5883	9446	67925	61676	129601	16	3	0	0	0	19	0.84	0.16	0.00	0.00	0.00	7954	1491	0	0	0	60068	69534	0	0	0
26-Jul-15	6039	6288	12327	73964	67964	141928	29	6	0	0	0	35	0.83	0.17	0.00	0.00	0.00	10214	2113	0	0	0	70282	71647	0	0	0
27-Jul-15	5805	6411	12216	79769	74375	154144	33	5	0	0	0	38	0.87	0.13	0.00	0.00	0.00	10609	1607	0	0	0	80890	73254	0	0	0
28-Jul-15	4407	7335	11742	84176	81710	165886	16	8	0	0	0	24	0.67	0.33	0.00	0.00	0.00	7828	3914	0	0	0	88718	77168	0	0	0
29-Jul-15	4431	5514	9945	88607	87224	175831	6	3	0	0	0	9	0.67	0.33	0.00	0.00	0.00	6630	3315	0	0	0	95348	80483	0	0	0
30-Jul-15	4230	5628	9858	92837	92852	185689	9	2	0	0	0	11	0.82	0.18	0.00	0.00	0.00	8066	1792	0	0	0	103414	82276	0	0	0
31-Jul-15	4893	3064	7957	97730	95916	193646	16	1	0	0	0	17	0.94	0.06	0.00	0.00	0.00	7489	468	0	0	0	110902	82744	0	0	0
1-Aug-15	5775	6027	11802	103505	101943	205448	9	0	0	0	0	9	1.00	0.00	0.00	0.00	0.00	11802	0	0	0	0	122704	82744	0	0	0
2-Aug-15	7224	9558	16782	110729	111501	222230	4	1	0	0	0	5	0.80	0.20	0.00	0.00	0.00	13426	3356	0	0	0	136130	86100	0	0	0
3-Aug-15	8463	13053	21516	119192	124554	243746	22	4	0	0	0	26	0.85	0.15	0.00	0.00	0.00	18206	3310	0	0	0	154336	89410	0	0	0
4-Aug-15	9630	14058	23688	128822	138612	267434	10	4	0	0	0	14	0.71	0.29	0.00	0.00	0.00	16920	6768	0	0	0	171256	96178	0	0	0
5-Aug-15	14190	17223	31413	143012	155835	298847	42	7	0	0	0	49	0.86	0.14	0.00	0.00	0.00	26925	4488	0	0	0	198181	100666	0	0	0
6-Aug-15	18993	19575	38568	162005	175410	337415	38	7	0	0	0	45	0.84	0.16	0.00	0.00	0.00	32569	5999	0	0	0	230750	106665	0	0	0
7-Aug-15	18762	19542	38304	180767	194952	375719	15	4	0	0	0	19	0.79	0.21	0.00	0.00	0.00	30240	8064	0	0	0	260990	114729	0	0	0
8-Aug-15	17220	7539	24759	197987	202491	400478	20	2	1	0	0	23	0.87	0.09	0.04	0.00	0.00	21530	2153	1076	0	0	282519	116882	1076	0	0
9-Aug-15	24873	20931	45804	222860	223422	446282	20	2	0	0	0	22	0.91	0.09	0.00	0.00	0.00	41640	4164	0	0	0	324159	121046	1076	0	0
10-Aug-15	21231	38061	59292	244091	261483	505574	20	5	0	0	0	25	0.80	0.20	0.00	0.00	0.00	47434	11858	0	0	0	371593	132905	1076	0	0
11-Aug-15	15141	26178	41319	259232	287661	546893	46	6	0	0	2	54	0.85	0.11	0.00	0.00	0.04	35198	4591	0	0	1530	406791	137496	1076	0	1530
12-Aug-15	11865	28338	40203	271097	315999	587096	33	5	0	0	1	39	0.85	0.13	0.00	0.00	0.03	34018	5154	0	0	1031	440809	142650	1076	0	2561
13-Aug-15	11772	19407	31179	282869	335406	618275	34	4	0	0	0	38	0.89	0.11	0.00	0.00	0.00	27897	3282	0	0	0	468706	145932	1076	0	2561

Appendix 2 cont.

	Total Expanded Daily Count			Cumulative Daily Count			Daily Catch						Species Proportion					Daily Species Count					Cumulative Species Count				
Date	RB	LB	Total	RB	LB	Total	Sockeye	Chinook	Chinook Jacks	Coho	Pink	Total	Sockeye	Chinook Adults	Chinook Jacks	Coho	Pink	Sockeye	Chinook Adults	Chinook Jacks	Coho	Pink	Sockeye	Chinook Adults	Chinook Jacks	Coho	Pink
14-Aug-15	17415	18783	36198	300284	354189	654473	46	2	0	0	1	49	0.94	0.04	0.00	0.00	0.02	33981	1477	0	0	739	502687	147409	1076	0	3300
15-Aug-15	18744	23712	42456	319028	377901	696929	57	4	0	0	3	64	0.89	0.06	0.00	0.00	0.05	37812	2654	0	0	1990	540499	150063	1076	0	5290
16-Aug-15	18051	25839	43890	337079	403740	740819	22	5	0	0	1	28	0.79	0.18	0.00	0.00	0.04	34485	7838	0	0	1568	574984	157900	1076	0	6858
17-Aug-15	21966	28848	50814	359045	432588	791633	38	5	0	0	6	49	0.78	0.10	0.00	0.00	0.12	39407	5185	0	0	6222	614391	163085	1076	0	13080
18-Aug-15	27300	27630	54930	386345	460218	846563	46	6	0	0	2	54	0.85	0.11	0.00	0.00	0.04	46792	6103	0	0	2034	661183	169189	1076	0	15114
19-Aug-15	18071	34467	52538	404416	494685	899100	30	3	0	0	2	35	0.86	0.09	0.00	0.00	0.06	45032	4503	0	0	3002	706216	173692	1076	0	18116
20-Aug-15	25431	33282	58713	429847	527967	957813	36	7	0	0	4	47	0.77	0.15	0.00	0.00	0.09	44972	8744	0	0	4997	751187	182436	1076	0	23113
21-Aug-15	23880	36572	60452	453727	564539	1018265	28	6	0	0	4	38	0.74	0.16	0.00	0.00	0.11	44544	9545	0	0	6363	795731	191981	1076	0	29476
22-Aug-15	21738	40731	62469	475465	605270	1080734	12	2	2	0	5	21	0.57	0.10	0.10	0.00	0.24	35697	5949	5949	0	14874	831427	197931	7026	0	44350
23-Aug-15	33711	35238	68949	509176	640508	1149683	27	4	0	0	3	34	0.79	0.12	0.00	0.00	0.09	54754	8112	0	0	6084	886181	206042	7026	0	50434
24-Aug-15	28947	48390	77337	538123	688898	1227020	33	8	0	0	12	53	0.62	0.15	0.00	0.00	0.23	48153	11674	0	0	17510	934334	217716	7026	0	67944
25-Aug-15	25302	50019	75321	563425	738917	1302341	20	6	1	0	17	44	0.45	0.14	0.02	0.00	0.39	34237	10271	1712	0	29101	968571	227987	8738	0	97045
26-Aug-15	24684	54315	78999	588109	793232	1381340	28	3	0	0	7	38	0.74	0.08	0.00	0.00	0.18	58210	6237	0	0	14552	1026781	234224	8738	0	111598
27-Aug-15	29061	51825	80886	617170	845057	1462226	17	1	0	0	8	26	0.65	0.04	0.00	0.00	0.31	52887	3111	0	0	24888	1079668	237335	8738	0	136486
28-Aug-15	24900	55134	80034	642070	900191	1542260	21	7	1	0	15	44	0.48	0.16	0.02	0.00	0.34	38198	12733	1819	0	27284	1117866	250067	10557	0	163770
29-Aug-15	21720	54111	75831	663790	954302	1618091	21	6	0	0	5	32	0.66	0.19	0.00	0.00	0.16	49764	14218	0	0	11849	1167630	264286	10557	0	175619
30-Aug-15	26565	38472	65037	690355	992774	1683128	31	10	1	0	7	49	0.63	0.20	0.02	0.00	0.14	41146	13273	1327	0	9291	1208776	277559	11884	0	184910
31-Aug-15	11709	58026	69735	702064	1050800	1752863	28	13	0	0	3	44	0.64	0.30	0.00	0.00	0.07	44377	20604	0	0	4755	1253153	298162	11884	0	189664
1-Sep-15	15569	46785	62354	717632	1097585	1815217	18	7	0	0	2	27	0.67	0.26	0.00	0.00	0.07	41569	16166	0	0	4619	1294722	314328	11884	0	194283
2-Sep-15	16611	39147	55758	734243	1136732	1870975	36	6	0	0	2	44	0.82	0.14	0.00	0.00	0.05	45620	7603	0	0	2534	1340342	321931	11884	0	196818
3-Sep-15	17835	38460	56295	752078	1175192	1927270	27	11	0	0	7	45	0.60	0.24	0.00	0.00	0.16	33777	13761	0	0	8757	1374119	335692	11884	0	205575
4-Sep-15	29760	40638	70398	781838	1215830	1997668	26	7	0	0	14	47	0.55	0.15	0.00	0.00	0.30	38944	10485	0	0	20970	1413062	346177	11884	0	226544
5-Sep-15	40941	37299	78240	822779	1253129	2075908	33	1	0	0	25	59	0.56	0.02	0.00	0.00	0.42	43761	1326	0	0	33153	1456824	347503	11884	0	259697
6-Sep-15	42678	60249	102927	865457	1313378	2178835	24	13	2	1	32	72	0.33	0.18	0.03	0.01	0.44	34309	18584	2859	1430	45745	1491133	366087	14743	1430	305442
7-Sep-15	62184	59847	122031	927641	1373225	2300866	20	8	0	0	72	100	0.20	0.08	0.00	0.00	0.72	24406	9762	0	0	87862	1515539	375850	14743	1430	393304
8-Sep-15	66870	56583	123453	994511	1429808	2424319	35	6	2	0	98	141	0.25	0.04	0.01	0.00	0.70	30644	5253	1751	0	85804	1546183	381103	16494	1430	479109
9-Sep-15	80034	48165	128199	1074545	1477973	2552518	19	9	0	0	28	56	0.34	0.16	0.00	0.00	0.50	43496	20603	0	0	64100	1589679	401706	16494	1430	543208
10-Sep-15	70965	62676	133641	1145510	1540649	2686159	16	12	1	0	19	48	0.33	0.25	0.02	0.00	0.40	44547	33410	2784	0	52900	1634226	435117	19278	1430	596108
11-Sep-15	52410	57948	110358	1197920	1598597	2796517	13	6	0	0	57	76	0.17	0.08	0.00	0.00	0.75	18877	8712	0	0	82769	1653103	443829	19278	1430	678876
12-Sep-15	39561	59457	99018	1237481	1658054	2895535	10	4	0	0	18	32	0.31	0.13	0.00	0.00	0.56	30943	12377	0	0	55698	1684047	456206	19278	1430	734574
13-Sep-15	33129	43635	76764	1270610	1701689	2972299	28	13	0	0	10	51	0.55	0.25	0.00	0.00	0.20	42145	19567	0	0	15052	1726192	475774	19278	1430	749626
14-Sep-15	36480	25992	62472	1307090	1727681	3034771	27	17	2	0	10	56	0.48	0.30	0.04	0.00	0.18	30120	18965	2231	0	11156	1756312	494738	21510	1430	760781
15-Sep-15	33677	24000	57677	1340767	1751681	3092447	12	14	1	0	15	42	0.29	0.33	0.02	0.00	0.36	16479	19226	1373	0	20599	1772791	513964	22883	1430	781380
16-Sep-15	27882	27666	55548	1368649	1779347	3147995	17	8	3	0	17	45	0.38	0.18	0.07	0.00	0.38	20985	9875	3703	0	20985	1793776	523839	26586	1430	802365
17-Sep-15	29685	20214	49899	1398334	1799561	3197894	7	12	1	1	30	51	0.14	0.24	0.02	0.02	0.59	6849	11741	978	978	29352	1800625	535580	27564	2408	831717
18-Sep-15	25053	20235	45288	1423387	1819796	3243182	10	11	2	0	18	41	0.24	0.27	0.05	0.00	0.44	11046	12150	2209	0	19883	1811670	547730	29774	2408	851600
19-Sep-15	18003	21636	39639	1441390	1841432	3282821	7	12	2	0	39	60	0.12	0.20	0.03	0.00	0.65	4625	7928	1321	0	25765	1816295	555658	31095	2408	877365
20-Sep-15	3806	12591	16397	1445195	1854023	3299218	4	4	2	0	11	21	0.19	0.19	0.10	0.00	0.52	3123	3123	1562	0	8589	1819418	558781	32656	2408	885954
21-Sep-15	5343	14631	19974	1450538	1868654	3319192	0	11	0	0	4	15	0.00	0.73	0.00	0.00	0.27	0	14648	0	0	5326	1819418	573429	32656	2408	891280
22-Sep-15	4452	7365	11817	1454990	1876019	3331009	3	14	2	0	5	24	0.13	0.58	0.08	0.00	0.21	1477	6893	985	0	2462	1820895	580322	33641	2408	893742
23-Sep-15	3501	330	3831	1458491	1876349	3334840						0	0.13	0.58	0.08	0.00	0.21	479	2235	319	0	798	1821374	582557	33960	2408	894540

Appendix 3. Catch by drift from Qualark drift gill net test fishing program in 2015 including drift number, location, start and end times, duration, mesh size and comments.

			Time				Caught						
Date	Drift	Location	Start	End	Duration	Mesh Size	Sockeye	Chinook	Chin. Jacks	Coho	Pink	Total	Comments
29/6/15	1	near	07:11	07:16	05:00	4.00	0	0	0	0	0	0	No fish.
29/6/15	2	near	07:21	07:26	05:00	5.25	0	2	0	0	0	2	One Chinook released itself, one Chinook unable to revive.
29/6/15	3	near	07:47	07:52	05:00	6.75	0	0	0	0	0	0	
29/6/15	4	near	19:04	19:09	05:00	4.75	0	0	0	0	0	0	
29/6/15	5	near	19:20	19:25	05:00	5.75	0	0	0	0	0	0	
29/6/15	6	near	19:45	19:50	05:00	8.00	0	0	0	0	0	0	No fish.
30/6/15	1	near	07:00	07:06	06:00	4.75	1	0	0	0	0	1	Caught an American Shad.
30/6/15	2	near	07:21	07:26	05:00	5.75	0	0	0	0	0	0	
30/6/15	3	near	07:38	07:43	05:00	8.00	0	0	0	0	0	0	
30/6/15	4	near	19:00	19:05	05:00	4.00	0	0	0	0	0	0	
30/6/15	5	near	19:22	19:27	05:00	5.25	0	0	0	0	0	0	
30/6/15	6	near	19:40	19:45	05:00	6.75	0	1	0	0	0	1	One Chinook fell off the net.
1/7/15	1	near	07:04	07:09	05:00	4.75	0	0	0	0	0	0	Daily net sequence not rotated.
1/7/15	2	near	07:22	07:27	05:00	5.75	0	2	0	0	0	2	Two Chinook hit net but released while pulling net.
1/7/15	3	near	07:40	07:44	04:00	8.00	0	0	0	0	0	0	
1/7/15	4	near	19:11	19:16	05:00	4.00	0	0	0	0	0	0	
1/7/15	5	near	19:28	19:33	05:00	5.25	0	0	0	0	0	0	
1/7/15	6	near	19:56	20:01	05:00	6.75	0	1	0	0	0	1	One Chinook released.
2/7/15	1	near	07:02	07:06	04:00	4.00	2	0	0	0	0	2	Two Sockeye hit the net but were not caught.
2/7/15	2	near	07:20	07:25	05:00	5.25	0	1	0	0	0	1	One Chinook dead.
2/7/15	3	near	07:42	07:47	05:00	6.75	0	0	0	0	0	0	
2/7/15	7	far	07:50	07:53	03:00	5.25	0	0	0	0	0	0	
2/7/15	4	near	19:00	19:05	05:00	4.75	0	1	0	0	0	1	One Chinook dead.
2/7/15	5	near	19:22	19:27	05:00	5.75	0	1	0	0	0	1	One Chinook unable to revive.
2/7/15	6	near	19:42	19:47	05:00	8.00	0	1	0	0	0	1	One Chinook released safely.
3/7/15	1	near	07:00	07:05	05:00	4.75	0	3	0	0	0	3	One clipped and one adipose present Chinook. One released safely.
3/7/15	2	near	07:21	07:27	06:00	5.75	0	0	0	0	0	0	
3/7/15	3	near	07:42	07:48	06:00	8.00	0	2	0	0	0	2	Two Chinook released.
3/7/15	4	near	19:00	19:05	05:00	4.00	0	0	0	0	0	0	Seal by weir.
3/7/15	5	near	19:20	19:26	06:00	5.25	0	0	0	0	0	0	
3/7/15	6	near	19:42	19:48	06:00	6.75	0	0	0	0	0	0	
4/7/15	1	near	07:01	07:06	05:00	4.00	0	0	0	0	0	0	
4/7/15	2	near	07:20	07:26	06:00	5.25	0	4	0	0	0	4	
4/7/15	3	near	07:40	07:45	05:00	6.75	0	0	0	0	0	0	
4/7/15	4	near	19:00	19:05	05:00	4.75	0	0	0	0	0	0	A couple of fish hit net but species unknown.
4/7/15	5	near	19:20	19:25	05:00	5.75	0	1	0	0	0	1	
4/7/15	6	near	19:40	19:43	03:00	8.00	0	2	0	0	0	2	Net drifted into shore, two Chinook released.
5/7/15	1	near	07:00	07:03	03:00	4.75	0	0	0	0	0	0	Incomplete drift. Net drifted into shore.
5/7/15	2	near	07:22	07:25	03:00	5.75	0	0	0	0	0	0	
5/7/15	3	near	07:35	07:40	05:00	8.00	0	0	0	0	0	0	No fish.
5/7/15	4	near	19:00	19:05	05:00	4.00	1	0	0	0	0	1	One Sockeye hit net but not caught.
5/7/15	5	near	19:27	19:32	05:00	5.25	2	0	0	0	0	2	Two hit and went through the net.
5/7/15	6	near	19:40	19:45	05:00	6.75	0	2	0	0	0	2	Two Chinook released while pulling in the net.

Appendix 3 cont.

			Time				Caught						
Date	Drift	Location	Start	End	Duration	Mesh Size	Sockeye	Chinook	Chin. Jacks	Coho	Pink	Total	Comments
6/7/15	1	near	07:00	07:06	06:00	4.00	0	0	0	0	0	0	
6/7/15	2	near	07:22	07:28	06:00	5.25	0	0	0	0	0	0	
6/7/15	3	near	07:45	07:50	05:00	6.75	0	2	0	0	0	2	
6/7/15	7	far	07:52	07:55	03:00	5.25	0	0	0	0	0	0	Offshore drift.
6/7/15	4	near	19:00	19:03	03:00	4.75	0	0	0	0	0	0	Incomplete drift. Net drifted into shore.
6/7/15	5	near	19:22	19:27	05:00	5.75	1	2	0	0	0	3	
6/7/15	6	near	19:42	19:47	05:00	8.00	0	2	0	0	0	2	Two Chinook hit net but fell out.
7/7/15	1	near	07:00	07:05	05:00	4.75	1	0	0	0	0	1	
7/7/15	2	near	07:20	07:25	05:00	5.75	0	3	0	0	0	3	Unable to revive Chinook.
7/7/15	3	near	07:42	07:47	05:00	8.00	0	2	0	0	0	2	Two Chinook bleeding heavily from gills.
7/7/15	4	near	19:02	19:08	06:00	4.00	0	2	0	0	0	2	One Chinook released, one clipped Chinook retained.
7/7/15	5	near	19:38	19:44	06:00	5.25	0	0	0	0	0	0	
7/7/15	6	near	19:52	19:57	05:00	6.75	0	2	0	0	0	2	Two Chinook hit net but released while pulling in the net.
8/7/15	1	near	07:02	07:07	05:00	4.00	0	2	0	0	0	2	
8/7/15	2	near	07:20	07:26	06:00	5.25	1	3	0	0	0	4	Two Chinook released, one dead.
8/7/15	3	near	07:45	07:50	05:00	6.75	0	0	0	0	0	0	No fish.
8/7/15	4	near	19:00	19:02	02:00	4.75	0	0	0	0	0	0	Incomplete drift. Net hung up just past weir.
8/7/15	5	near	19:20	19:25	05:00	5.75	0	0	0	0	0	0	No fish.
8/7/15	6	near	19:40	19:45	05:00	8.00	0	0	0	0	0	0	
9/7/15	1	near	07:02	07:07	05:00	4.75	1	3	0	0	0	4	One clipped Chinook retained, two unclipped Chinook released.
9/7/15	2	near	07:22	07:27	05:00	5.75	0	1	0	0	0	1	
9/7/15	3	near	07:42	07:47	05:00	8.00	0	1	0	0	0	1	One Chinook released.
9/7/15	7	far	07:51	07:55	04:00	5.25	0	0	0	0	0	0	Offshore drift.
9/7/15	4	near	19:00	19:05	05:00	4.00	0	1	0	0	0	1	
9/7/15	5	near	19:22	19:27	05:00	5.25	0	1	0	0	0	1	One Chinook released.
9/7/15	6	near	19:42	19:48	06:00	6.75	0	1	0	0	0	1	One Chinook hit the net then released.
10/7/15	1	near	07:00	07:06	06:00	4.00	0	2	0	0	0	2	One Chinook released, one Chinook hit net but fell off.
10/7/15	2	near	07:20	07:25	05:00	5.25	3	3	0	0	0	6	One clipped Chinook retained, one Chinook unable to revive and one released.
10/7/15	3	near	07:42	07:47	05:00	6.75	0	0	0	0	0	0	
10/7/15	4	near	19:00	19:05	05:00	4.75	0	0	0	0	0	0	
10/7/15	5	near	19:22	19:27	05:00	5.75	0	0	0	0	0	0	
10/7/15	6	near	19:42	19:48	06:00	8.00	0	0	0	0	0	0	No fish.
11/7/15	1	near	07:00	07:06	06:00	4.75	2	3	0	0	0	5	Three small Chinook released.
11/7/15	2	near	07:22	07:27	05:00	5.75	1	0	0	0	0	1	
11/7/15	3	near	07:42	07:47	05:00	8.00	0	2	0	0	0	2	Two Chinook bleeding badly.
11/7/15	4	near	19:04	19:10	06:00	4.00	4	0	0	0	0	4	
11/7/15	5	near	19:22	19:28	06:00	5.25	1	1	0	0	0	2	One Chinook dead.
11/7/15	6	near	19:40	19:43	03:00	6.75	0	1	0	0	0	1	Incomplete drift. One clipped Chinook retained.
12/7/15	1	near	07:12	07:18	06:00	4.00	4	0	0	0	0	4	
12/7/15	2	near	07:25	07:28	03:00	5.25	0	0	0	0	0	0	Incomplete drift. Hung up after the weir.
12/7/15	3	near	07:45	07:50	05:00	6.75	0	1	0	0	0	1	
12/7/15	4	near	19:00	19:06	06:00	4.75	1	0	0	0	0	1	
12/7/15	5	near	19:20	19:26	06:00	5.75	1	1	0	0	0	2	One Chinook unable to revive.
12/7/15	6	near	19:42	19:47	05:00	8.00	2	4	0	0	0	6	All Chinook released safely.
13/7/15	1	near	07:02	07:04	02:00	4.75	2	0	0	0	0	2	Incomplete drift. Hung up at the weir.
13/7/15	2	near	07:18	07:23	05:00	5.75	1	10	0	0	0	11	
13/7/15	3	near	07:42	07:47	05:00	8.00	0	0	0	0	0	0	
13/7/15	7	far	07:50	07:52	02:00	5.25	0	0	0	0	0	0	Offshore drift.
13/7/15	4	near	19:00	19:06	06:00	4.00	3	0	0	0	0	3	
13/7/15	5	near	19:25	19:30	05:00	5.25	0	0	0	0	0	0	

Appendix 3 cont.

			Time				Caught						
Date	Drift	Location	Start	End	Duration	Mesh Size	Sockeye	Chinook	Chin. Jacks	Coho	Pink	Total	Comments
13/7/15	6	near	19:42	19:47	05:00	6.75	0	1	0	0	0	1	One Chinook released.
14/7/15	1	near	07:00	07:06	06:00	4.00	2	0	0	0	0	2	
14/7/15	2	near	07:20	07:27	07:00	5.25	0	5	0	0	0	5	
14/7/15	3	near	07:42	07:47	05:00	6.75	2	0	0	0	0	2	
14/7/15	4	near	19:01	19:06	05:00	4.75	0	0	0	0	0	0	
14/7/15	5	near	19:25	19:30	05:00	5.75	0	0	0	0	0	0	
14/7/15	6	near	19:40	19:46	06:00	8.00	1	4	0	0	0	5	Four Chinook released.
15/7/15	1	near	07:03	07:08	05:00	4.75	1	0	0	0	0	1	One sockeye hit net but fell out.
15/7/15	2	near	07:22	07:28	06:00	5.75	0	3	0	0	0	3	
15/7/15	3	near	07:43	07:49	06:00	8.00	0	0	0	0	0	0	
15/7/15	4	near	19:05	19:10	05:00	4.00	1	0	0	0	0	1	
15/7/15	5	near	19:25	19:30	05:00	5.25	0	0	0	0	0	0	
15/7/15	6	near	19:45	19:51	06:00	6.75	0	1	0	0	0	1	One Chinook unable to revive.
16/7/15	1	near	07:00	07:05	05:00	4.00	2	0	0	0	0	2	
16/7/15	2	near	07:22	07:26	04:00	5.25	0	0	0	0	0	0	
16/7/15	3	near	07:45	07:50	05:00	6.75	4	3	0	0	0	7	
16/7/15	7	far	07:53	07:57	04:00	5.25	0	0	0	0	0	0	
16/7/15	4	near	19:00	19:05	05:00	4.75	0	0	0	0	0	0	
16/7/15	5	near	19:21	19:25	04:00	5.75	1	1	0	0	0	2	Incomplete drift. Hung up after the weir.
16/7/15	6	near	19:40	19:45	05:00	8.00	0	1	0	0	0	1	
17/7/15	1	near	07:02	07:07	05:00	4.75	0	4	0	0	0	4	Three Chinook released, one bleeding too badly to release.
17/7/15	2	near	07:20	07:25	05:00	5.75	1	1	0	0	0	2	
17/7/15	3	near	07:42	07:47	05:00	8.00	1	2	0	0	0	3	Two Chinook fell out while pulling in net.
17/7/15	4	near	19:03	19:10	07:00	4.00	0	1	0	0	0	1	
17/7/15	5	near	19:20	19:26	06:00	5.25	0	0	0	0	0	0	
17/7/15	6	near	19:42	19:48	06:00	6.75	0	0	0	0	0	0	
18/7/15	1	near	07:00	07:03	03:00	4.00	0	1	0	0	0	1	Incomplete drift, net drifted into shore, one Chinook fell off the net.
18/7/15	2	near	07:21	07:26	05:00	5.25	2	1	0	0	0	3	
18/7/15	3	near	07:40	07:46	06:00	6.75	0	0	0	0	0	0	
18/7/15	4	near	19:00	19:06	06:00	4.75	4	0	0	0	0	4	
18/7/15	5	near	19:20	19:25	05:00	5.75	0	1	0	0	0	1	One Chinook fell off the net.
18/7/15	6	near	19:45	19:50	05:00	8.00	0	0	0	0	0	0	
19/7/15	1	near	07:03	07:07	04:00	4.75	1	0	0	0	0	1	Incomplete drift, hung up at weir.
19/7/15	2	near	07:20	07:25	05:00	5.75	2	1	0	0	0	3	
19/7/15	3	near	07:40	07:45	05:00	8.00	0	0	0	0	0	0	
19/7/15	4	near	19:00	19:05	05:00	4.00	3	2	0	0	0	5	Two Chinook hit net but fell out at boat.
19/7/15	5	near	19:20	19:25	05:00	5.25	1	0	0	0	0	1	
19/7/15	6	near	19:41	19:47	06:00	6.75	0	2	0	0	0	2	Two Chinook released.
20/7/15	1	near	07:00	07:06	06:00	4.00	2	2	0	0	0	4	Two Chinook dead.
20/7/15	2	near	07:20	07:26	06:00	5.25	4	0	0	0	0	4	
20/7/15	3	near	07:45	07:50	05:00	6.75	0	3	0	0	0	3	One clipped Chinook.
20/7/15	7	far	07:52	07:55	03:00	5.25	0	0	0	0	0	0	Offshore drift.
20/7/15	4	near	19:00	19:05	05:00	4.75	0	2	0	0	0	2	
20/7/15	5	near	19:20	19:25	05:00	5.75	2	0	0	0	0	2	
20/7/15	6	near	19:45	19:51	06:00	8.00	0	4	0	0	0	4	Three Chinook released, one dead.
21/7/15	1	near	07:00	07:06	06:00	4.75	15	2	0	0	0	17	Two Chinook released.
21/7/15	2	near	07:20	07:27	07:00	5.75	1	0	0	0	0	1	
21/7/15	3	near	07:42	07:49	07:00	8.00	4	7	0	0	0	11	Two Chinook dead, five released safely.
21/7/15	4	near	19:00	19:06	06:00	4.00	6	0	0	0	0	6	
21/7/15	5	near	19:28	19:34	06:00	5.25	0	0	0	0	0	0	

Appendix 3 cont.

			Time				Caught						
Date	Drift	Location	Start	End	Duration	Mesh Size	Sockeye	Chinook	Chin. Jacks	Coho	Pink	Total	Comments
21/7/15	6	near	19:44	19:50	06:00	6.75	1	5	0	0	0	6	All Chinook released.
22/7/15	1	near	07:00	07:06	06:00	4.00	1	2	0	0	0	3	Two Chinook unable to revive.
22/7/15	2	near	07:22	07:27	05:00	5.25	1	1	0	0	0	2	One Chinook bleeding from gills.
22/7/15	3	near	07:40	07:46	06:00	6.75	1	1	0	0	0	2	One Chinook released safely.
22/7/15	4	near	19:00	19:06	06:00	4.75	9	2	0	0	0	11	One Chinook released safely, one dead.
22/7/15	5	near	19:22	19:29	07:00	5.75	0	2	0	0	0	2	Two Chinooks released.
22/7/15	6	near	19:42	19:48	06:00	8.00	0	0	0	0	0	0	
23/7/15	1	near	07:00	07:06	06:00	4.75	4	1	0	0	0	5	One Chinook released.
23/7/15	2	near	07:22	07:28	06:00	5.75	1	0	0	0	0	1	
23/7/15	3	near	07:40	07:45	05:00	8.00	0	1	0	0	0	1	
23/7/15	7	far	07:50	07:55	05:00	5.25	0	0	0	0	0	0	Offshore drift.
23/7/15	4	near	19:00	19:06	06:00	4.00	2	1	0	0	0	3	One Chinook hit the net but fell off.
23/7/15	5	near	19:20	19:25	05:00	5.25	1	0	0	0	0	1	Bad drift. Hung up but recovered.
23/7/15	6	near	19:40	19:46	06:00	6.75	2	2	0	0	0	4	Two dead Chinook.
24/7/15	1	near	07:00	07:06	06:00	4.00	4	2	0	0	0	6	
24/7/15	2	near	07:22	07:28	06:00	5.25	4	0	0	0	0	4	
24/7/15	3	near	07:42	07:49	07:00	6.75	1	0	0	0	0	1	
24/7/15	4	near	19:00	19:03	03:00	4.75	3	1	0	0	0	4	Incomplete drift, hung up bad.
24/7/15	5	near	19:25	19:28	03:00	5.75	1	0	0	0	0	1	Incomplete drift, hung up bad.
24/7/15	6	near	19:48	19:53	05:00	8.00	2	1	0	0	0	3	
25/7/15	1	near	07:00	07:05	05:00	4.75	5	3	0	0	0	8	One Chinook released 2 dead.
25/7/15	2	near	07:28	07:34	06:00	5.75	3	0	0	0	0	3	
25/7/15	3	near	07:48	07:54	06:00	8.00	2	0	0	0	0	2	
25/7/15	4	near	19:05	19:10	05:00	4.00	3	0	0	0	0	3	
25/7/15	5	near	19:27	19:32	05:00	5.25	3	0	0	0	0	3	
25/7/15	6	near	19:48	19:53	05:00	6.75	0	0	0	0	0	0	
26/7/15	1	near	07:00	07:05	05:00	4.00	18	1	0	0	0	19	
26/7/15	2	near	07:28	07:35	07:00	5.25	0	0	0	0	0	0	
26/7/15	3	near	07:48	07:54	06:00	6.75	2	3	0	0	0	5	Unable to revive Chinook.
26/7/15	4	near	19:00	19:06	06:00	4.75	9	2	0	0	0	11	Two Chinook bleeding from the gills.
26/7/15	5	near	19:28	19:32	04:00	5.75	0	0	0	0	0	0	
26/7/15	6	near	19:48	19:50	02:00	8.00	0	0	0	0	0	0	Hung up badly at the weir, net trashed.
27/7/15	1	near	07:00	07:05	05:00	4.75	25	1	0	0	0	26	
27/7/15	2	near	07:26	07:31	05:00	5.75	0	0	0	0	0	0	
27/7/15	3	near	07:48	07:53	05:00	8.00	5	2	0	0	0	7	One Chinook released, one dead.
27/7/15	7	far	07:58	08:01	03:00	5.25	0	0	0	0	0	0	Offshore drift.
27/7/15	4	near	19:00	19:05	05:00	4.00	2	1	0	0	0	3	
27/7/15	5	near	19:28	19:34	06:00	5.25	1	0	0	0	0	1	
27/7/15	6	near	19:48	19:53	05:00	6.75	0	1	0	0	0	1	
28/7/15	1	near	07:00	07:06	06:00	4.00	2	3	0	0	0	5	2 Chinook released.
28/7/15	2	near	07:25	07:28	03:00	5.25	1	1	0	0	0	2	Incomplete drift. Net drifted into shore.
28/7/15	3	near	07:48	07:53	05:00	6.75	0	4	0	0	0	4	Four Chinook released.
28/7/15	4	near	19:00	19:06	06:00	4.75	12	0	0	0	0	12	
28/7/15	5	near	19:25	19:31	06:00	5.75	1	0	0	0	0	1	
28/7/15	6	near	19:48	19:54	06:00	8.00	0	0	0	0	0	0	
29/7/15	1	near	07:02	07:05	03:00	4.75	1	0	0	0	0	1	
29/7/15	2	near	07:28	07:32	04:00	5.75	1	0	0	0	0	1	
29/7/15	3	near	07:48	07:53	05:00	8.00	1	0	0	0	0	1	
29/7/15	4	near	19:00	19:06	06:00	4.00	2	0	0	0	0	2	Hung up reset drift.
29/7/15	5	near	19:25	19:31	06:00	5.25	1	2	0	0	0	3	

Appendix 3 cont.

			Time				Caught						
Date	Drift	Location	Start	End	Duration	Mesh Size	Sockeye	Chinook	Chin. Jacks	Coho	Pink	Total	Comments
29/7/15	6	near	19:45	19:51	06:00	6.75	0	1	0	0	0	1	One Chinook fell off while pulling net.
30/7/15	1	near	07:02	07:08	06:00	4.00	6	0	0	0	0	6	
30/7/15	2	near	07:26	07:32	06:00	5.25	2	0	0	0	0	2	
30/7/15	3	near	07:45	07:50	05:00	6.75	0	2	0	0	0	2	
30/7/15	7	far	07:58	08:02	04:00	5.25	0	0	0	0	0	0	Offshore drift.
30/7/15	4	near	19:02	19:07	05:00	4.75	1	0	0	0	0	1	
30/7/15	5	near	19:25	19:30	05:00	5.75	0	0	0	0	0	0	
30/7/15	6	near	19:45	19:51	06:00	8.00	0	0	0	0	0	0	
31/7/15	1	near	07:00	07:06	06:00	4.75	14	1	0	0	0	15	
31/7/15	2	near	07:26	07:31	05:00	5.75	0	0	0	0	0	0	
31/7/15	3	near	07:45	07:50	05:00	8.00	0	0	0	0	0	0	
31/7/15	4	near	19:00	19:06	06:00	4.00	1	0	0	0	0	1	One sockeye fell off.
31/7/15	5	near	19:28	19:34	06:00	5.25	0	0	0	0	0	0	
31/7/15	6	near	19:48	19:52	04:00	6.75	1	0	0	0	0	1	FN Fishery opening from today 7pm to tomorrow 7pm.
1/8/15	1	near	07:00	07:06	06:00	4.00	2	0	0	0	0	2	
1/8/15	2	near	07:25	07:30	05:00	5.25	6	0	0	0	0	6	
1/8/15	3	near	07:48	07:54	06:00	6.75	1	0	0	0	0	1	No evening drifts (4, 5 or 6) due to mechanical problems with the test fishing boat.
2/8/15	4	near	19:01	19:07	06:00	4.00	4	0	0	0	0	4	No morning drifts (1, 2 or 3) due to mechanical problems with the test fishing boat.
2/8/15	5	near	19:28	19:33	05:00	5.25	0	0	0	0	0	0	
2/8/15	6	near	19:42	19:47	05:00	6.75	0	1	0	0	0	1	
3/8/15	1	near	07:00	07:06	06:00	4.00	18	1	0	0	0	19	One radio tagged sockeye.
3/8/15	2	near	07:24	07:27	03:00	5.25	0	1	0	0	0	1	Incomplete drift. Hung up past weir.
3/8/15	3	near	07:40	07:43	03:00	6.75	1	0	0	0	0	1	Incomplete drift hung up.
3/8/15	7	far	07:54	07:58	04:00	5.25	0	0	0	0	0	0	Offshore drift.
3/8/15	4	near	19:04	19:09	05:00	4.75	2	1	0	0	0	3	One Chinook with hook in mouth and bleeding bad.
3/8/15	5	near	19:20	19:26	06:00	5.75	0	0	0	0	0	0	
3/8/15	6	near	19:48	19:54	06:00	8.00	1	1	0	0	0	2	
4/8/15	1	near	07:00	07:06	06:00	5.75	3	1	0	0	0	4	
4/8/15	2	near	07:25	07:32	07:00	4.75	3	1	0	0	0	4	Bad drift hung up.
4/8/15	3	near	07:48	07:53	05:00	8.00	3	1	0	0	0	4	
4/8/15	4	near	19:05	19:10	05:00	4.00	0	0	0	0	0	0	
4/8/15	5	near	19:25	19:30	05:00	5.25	1	0	0	0	0	1	
4/8/15	6	near	19:40	19:45	05:00	6.75	0	1	0	0	0	1	One Chinook fell off while pulling net.
5/8/15	1	near	07:00	07:07	07:00	5.25	23	1	0	0	0	24	One clipped Chinook.
5/8/15	2	near	07:25	07:28	03:00	4.00	0	0	0	0	0	0	Incomplete drift, hung up.
5/8/15	3	near	07:48	07:53	05:00	6.75	0	4	0	0	0	4	
5/8/15	4	near	19:00	19:06	06:00	4.75	17	2	0	0	0	19	
5/8/15	5	near	19:28	19:33	05:00	5.75	1	0	0	0	0	1	Hit bottom but managed to recover.
5/8/15	6	near	19:49	19:55	06:00	8.00	1	0	0	0	0	1	Hung up had to reset.
6/8/15	1	near	07:00	07:07	07:00	4.75	28	2	0	0	0	30	Two Chinook released.
6/8/15	2	near	07:25	07:29	04:00	5.75	0	0	0	0	0	0	Incomplete drift, hung up.
6/8/15	3	near	07:43	07:49	06:00	8.00	2	3	0	0	0	5	One Chinook fell off net. Two released safely.
6/8/15	7	far				5.25	0	0	0	0	0	0	30m offshore.
6/8/15	4	near	19:00	19:03	03:00	4.00	6	1	0	0	0	7	Hung up bad after the weir.
6/8/15	5	near	19:29	19:35	06:00	5.25	2	1	0	0	0	3	One Chinook dead.
6/8/15	6	near	19:49	19:54	05:00	6.75	0	0	0	0	0	0	
7/8/15	1	near	07:00	07:03	03:00	4.00	4	2	0	0	0	6	Incomplete drift. Hung up after the weir.
7/8/15	2	near	07:20	07:23	03:00	5.25	2	1	0	0	0	3	Hung up in same spot. Net trashed.
7/8/15	3	near	07:40	07:46	06:00	6.75	0	0	0	0	0	0	
7/8/15	4	near	19:03	19:09	06:00	4.75	7	0	0	0	0	7	FN fishery opening tonight at 6 PM to Sunday 6 PM.

Appendix 3 cont.

			Time				Caught						
Date	Drift	Location	Start	End	Duration	Mesh Size	Sockeye	Chinook	Chin. Jacks	Coho	Pink	Total	Comments
7/8/15	5	near	19:28	19:34	06:00	5.75	1	0	0	0	0	1	
7/8/15	6	near	19:43	19:49	06:00	8.00	1	1	0	0	0	2	
8/8/15	1	near	07:00	07:06	06:00	5.75	9	1	0	0	0	10	One clipped Chinook.
8/8/15	2	near	07:28	07:33	05:00	4.75	2	0	0	0	0	2	
8/8/15	3	near	07:44	07:51	07:00	8.00	0	0	0	0	0	0	
8/8/15	4	near	19:00	19:06	06:00	4.00	9	0	1	0	0	10	
8/8/15	5	near	19:24	19:30	06:00	5.25	0	1	0	0	0	1	One Chinook released.
8/8/15	6	near	19:49	19:55	06:00	6.75	0	0	0	0	0	0	
9/8/15	1	near	07:01	07:07	06:00	5.25	13	0	0	0	0	13	
9/8/15	2	near	07:25	07:31	06:00	4.00	4	0	0	0	0	4	
9/8/15	3	near	07:49	07:54	05:00	6.75	2	0	0	0	0	2	
9/8/15	4	near	19:02	19:08	06:00	4.75	1	0	0	0	0	1	
9/8/15	5	near	19:28	19:33	05:00	5.75	0	1	0	0	0	1	
9/8/15	6	near	19:49	19:54	05:00	8.00	0	1	0	0	0	1	
10/8/15	1	near	07:02	07:05	03:00	4.75	12	1	0	0	0	13	Incomplete drift hung up past weir. Net trashed.
10/8/15	2	near	07:25	07:28	03:00	5.75	1	0	0	0	0	1	Incomplete drift hung up again. Net trashed again.
10/8/15	3	near	07:42	07:47	05:00	8.00	4	3	0	0	0	7	Net hit bottom but managed to recover.
10/8/15	7	far	07:55	07:58	03:00	5.25	0	0	0	0	0	0	30m offshore.
10/8/15	4	near	19:05	19:10	05:00	4.00	1	0	0	0	0	1	
10/8/15	5	near	19:30	19:35	05:00	5.25	2	1	0	0	0	3	One Chinook dead.
10/8/15	6	near	19:43	19:48	05:00	6.75	0	0	0	0	0	0	
11/8/15	1	near	07:00	07:05	05:00	4.00	23	0	0	0	2	25	First two Pinks of the season.
11/8/15	2	near	07:25	07:31	06:00	5.25	1	0	0	0	0	1	
11/8/15	3	near	07:48	07:54	06:00	6.75	15	5	0	0	0	20	Three Chinook released.
11/8/15	4	near	19:02	19:08	06:00	4.75	7	1	0	0	0	8	
11/8/15	5	near	19:25	19:30	05:00	5.75	0	0	0	0	0	0	
11/8/15	6	near	19:45	19:47	02:00	8.00	0	0	0	0	0	0	Incomplete drift, net hung up.
12/8/15	1	near	07:00	07:07	07:00	5.75	25	4	0	0	1	30	
12/8/15	2	near	07:23	07:29	06:00	4.75	0	0	0	0	0	0	One 2' sturgeon caught and released.
12/8/15	3	near	07:48	07:54	06:00	8.00	3	0	0	0	0	3	
12/8/15	4	near	19:02	19:08	06:00	4.00	4	0	0	0	0	4	
12/8/15	5	near	19:26	19:32	06:00	5.25	0	0	0	0	0	0	
12/8/15	6	near	19:48	19:54	06:00	6.75	1	1	0	0	0	2	
13/8/15	1	near	07:03	07:09	06:00	5.25	21	1	0	0	0	22	One Chinook unable to revive.
13/8/15	2	near	07:25	07:31	06:00	4.00	2	0	0	0	0	2	
13/8/15	3	near	07:48	07:54	06:00	6.75	1	1	0	0	0	2	
13/8/15	7	far	07:58	08:01	03:00	5.25	0	0	0	0	0	0	30m offshore.
13/8/15	4	near	19:00	19:07	07:00	4.75	10	2	0	0	0	12	One Chinook released, one clipped Chinook retained.
13/8/15	5	near	19:25	19:31	06:00	5.75	0	0	0	0	0	0	
13/8/15	6	near	19:48	19:54	06:00	8.00	0	0	0	0	0	0	Hit bottom but managed to recover.
14/8/15	1	near	07:00	07:06	06:00	4.75	9	0	0	0	1	10	
14/8/15	2	near	07:25	07:30	05:00	5.75	1	0	0	0	0	1	
14/8/15	3	near	07:49	07:53	04:00	8.00	1	0	0	0	0	1	
14/8/15	4	near	19:02	19:08	06:00	4.00	32	0	0	0	0	32	
14/8/15	5	near	19:25	19:31	06:00	5.25	1	2	0	0	0	3	One Chinook released, one clipped Chinook retained.
14/8/15	6	near	19:43	19:49	06:00	6.75	2	0	0	0	0	2	
15/8/15	1	near	07:00	07:06	06:00	4.00	9	2	0	0	1	12	One clipped Chinook retained.
15/8/15	2	near	07:28	07:34	06:00	5.25	0	0	0	0	0	0	
15/8/15	3	near	07:45	07:52	07:00	6.75	8	2	0	0	0	10	
15/8/15	4	near	19:00	19:07	07:00	4.75	37	0	0	0	2	39	

Appendix 3 cont.

			Time				Caught						
Date	Drift	Location	Start	End	Duration	Mesh Size	Sockeye	Chinook	Chin. Jacks	Coho	Pink	Total	Comments
15/8/15	5	near	19:23	19:29	06:00	5.75	1	0	0	0	0	1	
15/8/15	6	near	19:48	19:54	06:00	8.00	2	0	0	0	0	2	
16/8/15	1	near	07:03	07:10	07:00	5.75	3	0	0	0	0	3	
16/8/15	2	near	07:23	07:29	06:00	4.75	15	2	0	0	0	17	Two Chinook released.
16/8/15	3	near	07:43	07:49	06:00	8.00	0	1	0	0	0	1	One Chinook released.
16/8/15	4	near	19:02	19:08	06:00	4.00	2	0	0	0	1	3	
16/8/15	5	near	19:23	19:28	05:00	5.25	1	1	0	0	0	2	
16/8/15	6	near	19:45	19:51	06:00	6.75	1	1	0	0	0	2	
17/8/15	1	near	07:00	07:07	07:00	5.25	22	2	0	0	1	25	One Chinook released. One clipped Chinook retained.
17/8/15	2	near	07:23	07:29	06:00	4.00	1	0	0	0	2	3	
17/8/15	3	near	07:42	07:48	06:00	6.75	4	1	0	0	0	5	
17/8/15	7	far	07:58	08:01	03:00	5.25	0	0	0	0	0	0	30m offshore.
17/8/15	4	near	19:02	19:08	06:00	4.75	10	1	0	0	3	14	
17/8/15	5	near	19:25	19:31	06:00	5.75	0	0	0	0	0	0	
17/8/15	6	near	19:45	19:50	05:00	8.00	1	1	0	0	0	2	One Chinook released.
18/8/15	1	near	07:00	07:06	06:00	4.75	39	4	0	0	0	43	Two Chinook released.
18/8/15	2	near	07:28	07:34	06:00	5.75	1	1	0	0	0	2	
18/8/15	3	near	07:45	07:50	05:00	8.00	3	0	0	0	1	4	
18/8/15	4	near	19:00	19:06	06:00	4.00	2	0	0	0	0	2	
18/8/15	5	near	19:25	19:32	07:00	5.25	1	1	0	0	1	3	One Chinook dead.
18/8/15	6	near	19:42	19:45	03:00	6.75	0	0	0	0	0	0	Incomplete drift. Hung up past weir.
19/8/15	1	near	07:03	07:09	06:00	4.00	13	1	0	0	0	14	
19/8/15	2	near	07:25	07:32	07:00	5.25	2	0	0	0	1	3	
19/8/15	3	near	07:49	07:56	07:00	6.75	6	0	0	0	1	7	
19/8/15	4	near	19:00	19:06	06:00	4.75	5	1	0	0	0	6	
19/8/15	5	near	19:26	19:32	06:00	5.75	4	1	0	0	0	5	
19/8/15	6	near	19:51	19:54	03:00	8.00	0	0	0	0	0	0	Incomplete drift. Hung up after weir.
20/8/15	1	near	07:02	07:08	06:00	5.75	14	0	0	0	2	16	
20/8/15	2	near	07:23	07:29	06:00	4.75	1	0	0	0	1	2	
20/8/15	3	near	07:43	07:49	06:00	8.00	8	4	0	0	0	12	Four Chinook released.
20/8/15	7	far	08:01	08:04	03:00	5.25	0	0	0	0	0	0	30 m offshore.
20/8/15	4	near	19:02	19:10	08:00	4.00	2	1	0	0	1	4	Hung up before weir, reset net.
20/8/15	5	near	19:25	19:31	06:00	5.25	10	0	0	0	0	10	
20/8/15	6	near	19:49	19:55	06:00	6.75	1	2	0	0	0	3	Two Chinook released.
21/8/15	1	near	07:00	07:06	06:00	5.25	3	0	0	0	0	3	
21/8/15	2	near	07:26	07:33	07:00	4.00	6	0	0	0	3	9	
21/8/15	3	near	07:49	07:55	06:00	6.75	0	5	0	0	0	5	
21/8/15	4	near	19:03	19:09	06:00	4.75	18	1	0	0	1	20	One Chinook dead.
21/8/15	5	near	19:23	19:29	06:00	5.75	1	0	0	0	0	1	8 ft sturgeon caught and released.
21/8/15	6	near	19:45	19:48	03:00	8.00	0	0	0	0	0	0	Hung up, net trashed.
22/8/15	1	near	07:02	07:08	06:00	4.75	8	1	0	0	3	12	One Chinook unable to revive.
22/8/15	2	near	07:25	07:28	03:00	5.75	0	0	0	0	1	1	Incomplete drift, hung up past weir.
22/8/15	3	near	07:43	07:48	05:00	8.00	0	0	0	0	0	0	
22/8/15	4	near	19:05	19:11	06:00	4.00	4	0	2	0	0	6	
22/8/15	5	near	19:31	19:38	07:00	5.25	0	1	0	0	1	2	
22/8/15	6	near	19:51	19:57	06:00	6.75	0	0	0	0	0	0	
23/8/15	1	near	07:01	07:08	07:00	4.00	10	1	0	0	1	12	One Chinook bleeding badly.
23/8/15	2	near	07:23	07:29	06:00	5.25	0	2	0	0	0	2	Two Chinook released safely.
23/8/15	3	near	07:45	07:51	06:00	6.75	0	0	0	0	0	0	
23/8/15	4	near	19:02	19:10	08:00	4.75	15	1	0	0	2	18	

Appendix 3 cont.

			Time				Caught						
Date	Drift	Location	Start	End	Duration	Mesh Size	Sockeye	Chinook	Chin. Jacks	Coho	Pink	Total	Comments
23/8/15	5	near	19:25	19:31	06:00	5.75	1	0	0	0	0	1	
23/8/15	6	near	19:49	19:56	07:00	8.00	1	0	0	0	0	1	
24/8/15	1	near	07:00	07:07	07:00	5.75	16	6	0	0	5	27	Two Chinook dead, four released safely.
24/8/15	2	near	07:23	07:29	06:00	4.75	2	0	0	0	1	3	
24/8/15	3	near	07:43	07:49	06:00	8.00	0	0	0	0	0	0	Hit bottom three times.
24/8/15	7	far	07:58	08:02	04:00	5.25	0	0	0	0	0	0	
24/8/15	4	near	19:03	19:09	06:00	4.00	10	1	0	0	6	17	Chinook dead.
24/8/15	5	near	19:28	19:34	06:00	5.25	0	0	0	0	0	0	
24/8/15	6	near	19:48	19:54	06:00	6.75	5	1	0	0	0	6	One Chinook unable to revive.
25/8/15	1	near	07:00	07:06	06:00	5.25	10	0	0	0	11	21	
25/8/15	2	near	07:25	07:31	06:00	4.00	0	1	0	0	2	3	
25/8/15	3	near	07:49	07:55	06:00	6.75	0	2	0	0	0	2	Two Chinook released.
25/8/15	4	near	19:00	19:06	06:00	4.75	10	1	1	0	4	16	
25/8/15	5	near	19:25	19:30	05:00	5.75	0	0	0	0	0	0	
25/8/15	6	near	19:45	19:51	06:00	8.00	0	2	0	0	0	2	One Chinook dead, one fell off net.
26/8/15	1	near	07:01	07:08	07:00	4.75	12	2	0	0	3	17	
26/8/15	2	near	07:28	07:35	07:00	5.75	0	0	0	0	0	0	
26/8/15	3	near	07:45	07:51	06:00	8.00	1	0	0	0	0	1	
26/8/15	4	near	19:00	19:06	06:00	4.00	13	1	0	0	2	16	
26/8/15	5	near	19:23	19:29	06:00	5.25	1	0	0	0	1	2	
26/8/15	6	near	19:48	19:54	06:00	6.75	1	0	0	0	1	2	
27/8/15	1	near	07:00	07:07	07:00	4.00	8	0	0	0	3	11	
27/8/15	2	near	07:23	07:28	05:00	5.25	0	0	0	0	5	5	
27/8/15	3	near	07:43	07:48	05:00	6.75	0	0	0	0	0	0	
27/8/15	7	far	07:52	07:55	03:00	5.25	0	0	0	0	0	0	30m offshore.
27/8/15	4	near	19:02	19:09	07:00	4.75	9	1	0	0	0	10	One Chinook dead.
27/8/15	5	near	19:28	19:33	05:00	5.75	0	0	0	0	0	0	Net hit bottom twice managed to recover but net wrecked.
27/8/15	6	near	19:48	19:50	02:00	8.00	0	0	0	0	0	0	Incomplete drift, hung up past weir.
28/8/15	1	near	07:02	07:05	03:00	5.75	3	2	0	0	0	5	Hung up before weir.
28/8/15	2	near	07:23	07:29	06:00	4.75	4	0	0	0	10	14	
28/8/15	3	near	07:48	07:54	06:00	8.00	0	0	0	0	0	0	Net hit bottom multiple times.
28/8/15	4	near	19:00	19:07	07:00	4.00	10	0	0	0	0	10	
28/8/15	5	near	19:26	19:32	06:00	5.25	3	0	1	0	4	8	One small Chinook jack released.
28/8/15	6	near	19:45	19:52	07:00	6.75	1	5	0	0	1	7	Three Chinook released.
29/8/15	1	near	07:00	07:06	06:00	5.25	11	1	0	0	3	15	FN fishery opening 8am-4pm Saturday and Sunday.
29/8/15	2	near	07:26	07:31	05:00	4.00	1	0	0	0	1	2	
29/8/15	3	near	07:48	07:54	06:00	6.75	0	2	0	0	1	3	Two Chinook released.
29/8/15	4	near	19:00	19:07	07:00	4.75	7	1	0	0	0	8	One Chinook dead.
29/8/15	5	near	19:25	19:31	06:00	5.75	0	0	0	0	0	0	
29/8/15	6	near	19:42	19:48	06:00	8.00	2	2	0	0	0	4	Both Chinooks released.
30/8/15	1	near	07:00	07:08	08:00	4.75	20	5	0	0	2	27	
30/8/15	2	near	07:25	07:32	07:00	5.75	3	1	0	0	1	5	
30/8/15	3	near	07:45	07:51	06:00	8.00	0	2	0	0	1	3	Two dead Chinook.
30/8/15	4	near	19:02	19:09	07:00	4.00	6	1	1	0	1	9	One Chinook released.
30/8/15	5	near	19:23	19:29	06:00	5.25	1	1	0	0	1	3	
30/8/15	6	near	19:49	19:55	06:00	6.75	1	0	0	0	1	2	
31/8/15	1	near	07:00	07:06	06:00	4.00	17	3	0	0	1	21	
31/8/15	2	near	07:29	07:36	07:00	5.25	5	4	0	0	0	9	Two Chinook dead, two released.
31/8/15	3	near	07:44	07:50	06:00	6.75	0	1	0	0	1	2	
31/8/15	7	far	07:59	08:02	03:00	5.25	0	0	0	0	0	0	25m offshore.

Appendix 3 cont.

			Time				Caught						
Date	Drift	Location	Start	End	Duration	Mesh Size	Sockeye	Chinook	Chin. Jacks	Coho	Pink	Total	Comments
31/8/15	4	near	19:08	19:14	06:00	4.75	4	2	0	0	0	6	Hung up. Had to reset. Two Chinook released.
31/8/15	5	near	19:26	19:32	06:00	5.75	0	0	0	0	1	1	
31/8/15	6	near	19:49	19:55	06:00	8.00	2	3	0	0	0	5	Two Chinook released, one bleeding badly.
1/9/15	1	near	07:00	07:08	08:00	5.75	6	0	0	0	1	7	Hit bottom but managed to recover.
1/9/15	2	near	07:25	07:32	07:00	4.75	4	3	0	0	0	7	Two Chinook released, one Chinook jack dead.
1/9/15	3	near	07:43	07:50	07:00	8.00	0	0	0	0	1	1	
1/9/15	4	near	18:02	18:08	06:00	4.00	2	2	0	0	0	4	Evening drifts at 6PM from now on. Two dead Chinook.
1/9/15	5	near	18:26	18:33	07:00	5.25	1	0	0	0	0	1	
1/9/15	6	near	18:47	18:54	07:00	6.75	5	2	0	0	0	7	Two Chinook released.
2/9/15	1	near	07:00	07:06	06:00	5.25	12	1	0	0	2	15	One Chinook fell off boat.
2/9/15	2	near	07:23	07:29	06:00	4.00	1	0	0	0	0	1	
2/9/15	3	near	07:45	07:51	06:00	6.75	3	4	0	0	0	7	Two Chinook released, two bleeding too badly.
2/9/15	4	near	18:00	18:07	07:00	4.75	15	0	0	0	0	15	
2/9/15	5	near	18:25	18:31	06:00	5.75	5	0	0	0	0	5	
2/9/15	6	near	18:48	18:54	06:00	8.00	0	1	0	0	0	1	One Chinook unable to revive.
3/9/15	1	near	07:02	07:09	07:00	4.75	21	4	0	0	3	28	Two Chinook dead, two released.
3/9/15	2	near	07:23	07:29	06:00	5.75	2	0	0	0	0	2	
3/9/15	3	near	07:48	07:54	06:00	8.00	0	0	0	0	1	1	
3/9/15	7	far	07:59	08:03	04:00	5.25	0	0	0	0	0	0	30m offshore.
3/9/15	4	near	18:03	18:09	06:00	4.00	3	1	0	0	0	4	One Chinook bleeding from gills.
3/9/15	5	near	18:25	18:31	06:00	5.25	0	0	0	0	3	3	
3/9/15	6	near	18:48	18:54	06:00	6.75	1	6	0	0	0	7	Four Chinook released safely, two dead.
4/9/15	1	near	07:05	07:12	07:00	4.00	14	1	0	0	0	15	One dead Chinook.
4/9/15	2	near	07:25	07:31	06:00	5.25	1	0	0	0	0	1	
4/9/15	3	near	07:45	07:52	07:00	6.75	1	4	0	0	0	5	
4/9/15	4	near	18:03	18:07	04:00	4.75	10	0	0	0	10	20	Bad drift. Hung up, net trashed.
4/9/15	5	near	18:24	18:30	06:00	5.75	0	0	0	0	4	4	
4/9/15	6	near	18:48	18:54	06:00	8.00	0	2	0	0	0	2	Two Chinook bleeding.
5/9/15	1	near	07:00	07:05	05:00	5.75	7	0	0	0	1	8	
5/9/15	2	near	07:25	07:31	06:00	4.75	17	0	0	0	6	23	
5/9/15	3	near	07:42	07:48	06:00	8.00	1	0	0	0	1	2	
5/9/15	4	near	18:02	18:08	06:00	4.00	6	0	0	0	2	8	
5/9/15	5	near	18:25	18:31	06:00	5.25	1	1	0	0	15	17	One Chinook dead.
5/9/15	6	near	18:48	18:55	07:00	6.75	1	0	0	0	0	1	Bad drift. Hit bottom twice, net wrecked.
6/9/15	1	near	07:00	07:06	06:00	5.25	12	4	0	0	9	25	Two Chinook released.
6/9/15	2	near	07:26	07:33	07:00	4.00	2	0	2	0	4	8	Two jack Chinook dead.
6/9/15	3	near	07:46	07:52	06:00	6.75	1	9	0	0	4	14	Six Chinook released. Three Chinook bleeding too badly to release.
6/9/15	4	near	18:00	18:06	06:00	4.75	7	0	0	1	11	19	
6/9/15	5	near	18:28	18:35	07:00	5.75	2	0	0	0	4	6	
6/9/15	6	near	18:48	18:55	07:00	8.00	0	0	0	0	0	0	One six foot sturgeon released.
7/9/15	1	near	07:03	07:09	06:00	4.75	12	0	0	0	21	33	
7/9/15	2	near	07:32	07:38	06:00	5.75	5	5	0	0	15	25	Three Chinook released two unable to revive.
7/9/15	3	near	07:43	07:49	06:00	8.00	0	0	0	0	5	5	
7/9/15	7	far	08:04	08:08	04:00	5.25	0	0	0	0	0	0	30m offshore.
7/9/15	4	near	18:00	18:06	06:00	4.00	2	1	0	0	1	4	
7/9/15	5	near	18:26	18:33	07:00	5.25	1	1	0	0	26	28	One jack Chinook dead. Eighteen pinks released safely.
7/9/15	6	near	18:49	18:54	05:00	6.75	0	1	0	0	4	5	One Chinook and four pinks released.
8/9/15	1	near	07:02	07:08	06:00	4.00	20	0	2	0	6	28	
8/9/15	2	near	07:28	07:35	07:00	5.25	1	4	0	0	42	47	Three Chinook released.
8/9/15	3	near	07:46	07:52	06:00	6.75	4	1	0	0	14	19	Started releasing pinks after 50 were retained.

Appendix 3 cont.

			Time				Caught						
Date	Drift	Location	Start	End	Duration	Mesh Size	Sockeye	Chinook	Chin. Jacks	Coho	Pink	Total	Comments
8/9/15	4	near	18:00	18:06	06:00	4.75	9	1	0	0	15	25	All pinks released safely.
8/9/15	5	near	18:29	18:35	06:00	5.75	0	0	0	0	20	20	All pinks released.
8/9/15	6	near	18:42	18:47	05:00	8.00	1	0	0	0	1	2	
9/9/15	1	near	07:00	07:06	06:00	5.75	11	6	0	0	15	32	Three Chinook released, 3 bleeding from gills.
9/9/15	2	near	07:25	07:28	03:00	4.75	0	0	0	0	0	0	Incomplete drift. Hung up at weir, net trashed.
9/9/15	3	near	07:49	07:52	03:00	8.00	0	0	0	0	0	0	Bad drift. Hung up after the weir, net trashed again.
9/9/15	4	near	18:01	18:07	06:00	4.00	5	1	0	0	4	10	One Chinook dead.
9/9/15	5	near	18:28	18:33	05:00	5.25	3	0	0	0	8	11	
9/9/15	6	near	18:46	18:52	06:00	6.75	0	2	0	0	1	3	Two Chinook released.
10/9/15	1	near	07:02	07:08	06:00	5.25	6	6	0	0	6	18	Two Chinook released. FN fishery open today and tomorrow 7AM-7PM
10/9/15	2	near	07:25	07:31	06:00	4.00	2	0	0	0	6	8	
10/9/15	3	near	07:43	07:46	03:00	6.75	0	0	0	0	0	0	Bad hang up, net trashed.
10/9/15	7	far	07:52	07:55	03:00	5.25	0	0	0	0	0	0	30m offshore.
10/9/15	4	near	18:01	18:05	04:00	4.75	4	0	0	0	2	6	Incomplete drift. Hung up 200ft past the weir.
10/9/15	5	near	18:23	18:29	06:00	5.75	4	6	0	0	4	14	4 Chinook released two dead.
10/9/15	6	near	18:46	18:52	06:00	8.00	0	0	1	0	1	2	
11/9/15	1	near	07:03	07:09	06:00	4.75	6	0	0	0	7	13	
11/9/15	2	near	07:24	07:30	06:00	5.75	1	0	0	0	23	24	
11/9/15	3	near	07:46	07:52	06:00	8.00	0	1	0	0	5	6	
11/9/15	4	near	18:03	18:09	06:00	4.00	3	0	0	0	14	17	
11/9/15	5	near	18:25	18:31	06:00	5.25	2	3	0	0	7	12	Bad drift, hit bottom, broke net in two spots. Three Chinook bleeding from gills.
11/9/15	6	near	18:45	18:52	07:00	6.75	1	2	0	0	1	4	Hit bottom twice, two Chinook released.
12/9/15	1	near	07:02	07:08	06:00	4.00	5	1	0	0	1	7	One Chinook with hook wound.
12/9/15	2	near	07:26	07:31	05:00	5.25	3	0	0	0	1	4	
12/9/15	3	near	07:43	07:50	07:00	6.75	1	1	0	0	3	5	One Chinook unable to revive.
12/9/15	4	near	18:02	18:08	06:00	4.75	1	1	0	0	4	6	One dead Chinook.
12/9/15	5	near	18:26	18:32	06:00	5.75	0	1	0	0	9	10	
12/9/15	6	near	18:48	18:54	06:00	8.00	0	0	0	0	0	0	
13/9/15	1	near	07:00	07:06	06:00	5.75	8	10	0	0	1	19	Six Chinook released. Four unable to revive.
13/9/15	2	near	07:28	07:33	05:00	4.75	3	0	0	0	2	5	
13/9/15	3	near	07:42	07:48	06:00	8.00	1	1	0	0	1	3	
13/9/15	4	near	18:00	18:07	07:00	4.00	10	1	0	0	0	11	One dead Chinook.
13/9/15	5	near	18:24	18:30	06:00	5.25	6	1	0	0	6	13	
13/9/15	6	near	18:49	18:54	05:00	6.75	0	0	0	0	0	0	
14/9/15	1	near	07:02	07:09	07:00	5.25	10	5	1	0	1	17	
14/9/15	2	near	07:28	07:34	06:00	4.00	3	0	0	0	1	4	
14/9/15	3	near	07:44	07:50	06:00	6.75	0	6	0	0	2	8	
14/9/15	7	far	07:58	08:02	04:00	5.25	0	0	0	0	0	0	30m offshore.
14/9/15	4	near	18:02	18:08	06:00	4.75	11	3	1	0	2	17	
14/9/15	5	near	18:24	18:30	06:00	5.75	3	1	0	0	3	7	One Chinook released.
14/9/15	6	near	18:45	18:50	05:00	8.00	0	2	0	0	1	3	Two Chinook released.
15/9/15	1	near	07:03	07:09	06:00	4.75	5	6	1	0	3	15	Four Chinook release. Two dead.
15/9/15	2	near	07:26	07:31	05:00	5.75	3	2	0	0	4	9	One Chinook released.
15/9/15	3	near	07:43	07:49	06:00	8.00	1	2	0	0	1	4	Two Chinook released.
15/9/15	4	near	18:02	18:07	05:00	4.00	1	0	0	0	1	2	
15/9/15	5	near	18:22	18:28	06:00	5.25	1	2	0	0	5	8	
15/9/15	6	near	18:48	18:54	06:00	6.75	1	2	0	0	1	4	
16/9/15	1	near	07:00	07:07	07:00	4.00	11	3	3	0	8	25	
16/9/15	2	near	07:24	07:30	06:00	5.25	1	2	0	0	2	5	
16/9/15	3	near	07:46	07:51	05:00	6.75	0	0	0	0	2	2	

Appendix 3 cont.

			Time				Caught						
Date	Drift	Location	Start	End	Duration	Mesh Size	Sockeye	Chinook	Chin. Jacks	Coho	Pink	Total	Comments
16/9/15	4	near	18:02	18:06	04:00	4.75	5	3	0	0	3	11	
16/9/15	5	near	18:25	18:30	05:00	5.75	0	0	0	0	1	1	
16/9/15	6	near	18:44	18:49	05:00	8.00	0	0	0	0	1	1	
17/9/15	1	near	07:04	07:10	06:00	5.75	3	6	0	0	8	17	4 Chinook released.
17/9/15	2	near	07:26	07:32	06:00	4.75	1	3	0	0	9	13	All Chinook released safely.
17/9/15	3	near	07:42	07:48	06:00	8.00	0	0	0	0	1	1	
17/9/15	7	far	07:55	07:58	03:00	5.25	1	0	0	0	0	1	30m offshore.
17/9/15	4	near	18:04	18:09	05:00	4.00	2	2	1	0	1	6	Three Chinook unable to revive.
17/9/15	5	near	18:23	18:29	06:00	5.25	0	0	0	1	9	10	One Coho bleeding too badly to revive.
17/9/15	6	near	18:42	18:48	06:00	6.75	0	1	0	0	2	3	One Chinook released.
18/9/15	1	near	07:00	07:05	05:00	5.25	3	3	1	0	3	10	Three Chinook released.
18/9/15	2	near	07:26	07:31	05:00	4.00	6	2	1	0	3	12	One Chinook adult and one jack dead.
18/9/15	3	near	07:44	07:50	06:00	6.75	0	2	0	0	1	3	Two Chinook released.
18/9/15	4	near	18:00	18:06	06:00	4.75	0	4	0	0	3	7	All Chinook released safely.
18/9/15	5	near	18:26	18:32	06:00	5.75	0	0	0	0	3	3	
18/9/15	6	near	18:46	18:51	05:00	8.00	1	0	0	0	5	6	
19/9/15	1	near	07:02	07:08	06:00	4.75	5	5	0	0	8	18	Three Chinook released. Two bleeding badly.
19/9/15	2	near	07:26	07:32	06:00	5.75	1	3	0	0	4	8	All Chinook released.
19/9/15	3	near	07:43	07:48	05:00	8.00	0	1	0	0	6	7	One Chinook released.
19/9/15	4	near	18:02	18:09	07:00	4.00	1	1	2	0	1	5	One jack Chinook released.
19/9/15	5	near	18:28	18:34	06:00	5.25	0	2	0	0	12	14	Two Chinook released.
19/9/15	6	near	18:48	18:53	05:00	6.75	0	0	0	0	8	8	
20/9/15	1	near	07:02	07:09	07:00	4.00	1	4	2	0	5	12	Two Chinook released.
20/9/15	2	near	07:24	07:30	06:00	5.25	0	0	0	0	4	4	
20/9/15	3	near	07:45	07:48	03:00	6.75	0	0	0	0	0	0	Incomplete drift. Hung up, net trashed.
20/9/15	4	near	18:05	18:11	06:00	4.75	3	0	0	0	0	3	Lots of leaves in the net.
20/9/15	5	near	18:26	18:30	04:00	5.75	0	0	0	0	1	1	Incomplete drift. Hung up near the end of the drift.
20/9/15	6	near	18:49	18:54	05:00	8.00	0	0	0	0	1	1	
21/9/15	1	near	07:00	07:06	06:00	5.75	0	4	0	0	0	4	One Chinook when thru the net. All other captured Chinook were bleeding.
21/9/15	2	near	07:20	07:26	06:00	4.75	0	0	0	0	0	0	
21/9/15	3	near	07:46	07:52	06:00	8.00	0	2	0	0	0	2	Two Chinook dead.
21/9/15	7	far	07:58	08:01	03:00	5.25	0	0	0	0	0	0	30 m offshore.
21/9/15	4	near	18:02	18:08	06:00	4.00	0	1	0	0	0	1	One Chinook unable to revive.
21/9/15	5	near	18:26	18:32	06:00	5.25	0	4	0	0	0	4	Two Chinook released. Two dead.
21/9/15	6	near	18:46	18:51	05:00	6.75	0	0	0	0	4	4	
22/9/15	1	near	07:02	07:05	03:00	5.25	2	1	0	0	0	3	Incomplete drift. Hung up at the weir, net trashed.
22/9/15	2	near	07:26	07:32	06:00	4.00	1	0	2	0	1	4	All fish dead. One spawned out Pink.
22/9/15	3	near	07:45	07:51	06:00	6.75	0	3	0	0	1	4	
22/9/15	4	near	18:02	18:07	05:00	4.75	0	0	0	0	1	1	
22/9/15	5	near	18:24	18:30	06:00	5.75	0	9	0	0	1	10	
22/9/15	6	near	18:48	18:53	05:00	8.00	0	1	0	0	1	2	Last drift of the year.