# Aerial Survey Counts from Select Stikine River Chinook Spawning Sites, 2014

*(A project supported by the Northern Fund through the Pacific Salmon Commission)*

Final Report

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# Executive Summary

Aerial surveys were conducted to enumerate spawning Stikine River Chinook salmon*, Oncorhynchus tshawytscha*, at select Stikine River Chinook spawning sites on 05 August 2014. The objectives were to provide a relative measure of onsite validation of lower reach Chinook salmon spawners against a mark-recapture programme, as well the provision of aerial survey precision of spawners located above the Little Tahltan weir.

A combined total of 822 Chinook salmon was observed from five survey sites. The majority of fish were located in the main stem of the Tahltan River. No fish were observed at Christina Creek (a lower reach site) due to intense glacial siltation. The count yield from the Verrett River, another lower reach site, was weak, but this site too was negatively affected by glacial runoff. Approximately 70 per cent of the total run above the Little Tahltan weir was observed.

Of the $19.3k allotted through the Pacific Salmon Commission's Northern Endowment fund, only 50 per cent was expended. The shortfall was a product of the Yukon and Transboundary Rivers Area responding to an ecological catastrophic event by realigning priorities and staff. The event that triggered the response was a rock slide that blocked salmon access to the Tahltan River; a system that produces close to 50 per cent of the both Chinook and sockeye salmon, *Oncorhynchus nerka*. As a result only one of the two aerial survey events was prosecuted.

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# 1 Introduction

Stikine River Chinook salmon are harvested in both US and Canadian waters. In the US, troll, recreational, commercial and subsistence gillnets fleets intercept Stikine River bound Chinook salmon. In Canada, commercial gillnet, food social and ceremonial (FSC), and recreational fleets target this population. Stikine River Chinook are subject to the principles and annexes of international Pacific Salmon Treaty (PST). Fisheries management regimes are, therefore, driven by catch share provision as prescribed by the PST (PST 2009). The Transboundary Technical Committee (TTC), under the auspices of the PST, generates spawning goal escapements and annual total allowable catch metrics.

Chinook salmon in the Stikine River comprise one of over 50 indicator stocks included in annual assessments by the Chinook Technical Committee (CTC) of the Pacific Salmon Commission (PSC) to determine stock status, effects of management regimes, and other requirements of the Pacific Salmon Treaty (PST) (Der Hovanisian and Etherton 2006). The Stikine River is one of the largest producers of Chinook salmon in Northern B.C. and Southeast Alaska (Der Hovanisian and Etherton 2006). Spawning occurs in the lower mainstem and tributaries such as Tahltan, Little Tahltan, Chutine, Katete, Craig, Barrington and Tuya rivers; and Beatty, Christina, Verrett, Shakes, Sixmile, Andrew, and Tashoots creeks (DFO 1991; Pahlke and Etherton 1999; Bernard et al. 2000). The total Stikine River target escapement range is 14,000 to 28,000 large Chinook salmon with a point target of 17,368 large fish (PSC 2004). Reflective of the total Stikine River escapement goal, the target escapement range for Little Tahltan River is 2,700 to 5,300 large fish with a point target of 3,300 large fish (Bernard et al 2000).

The TTC uses a Chinook salmon model, referred to as the Stikine Chinook Salmon Management Model (SCMM), for in-season fisheries management. The SCMM is based on a linear regression between weekly cumulative CPUE of large Chinook salmon observed at a tagging site in the lower Stikine River and total run size based on mark-recapture studies conducted since 1996. For escapement enumeration, aerial helicopter surveys of the Little Tahltan River have been conducted annually from 1975 – 2008, and a fish-enumeration weir has been operated at the mouth of the Little Tahltan River since 1985 (Benard et al. 2000). Since 1996, annual mark-recapture studies have been used to estimate spawning escapements (Pahlke and Etherton 1998, 1999, 2000; Pahlke et al. 2000; Der Hovanisian et al. 2002, 2003, 2004; Der Hovanisian and Etherton 2005; Der Hovanisian and Etherton 2006). In 1997 and 2005, radio-telemetry studies were conducted in conjunction with mark-recapture experiments to estimate the distribution and run timing of Chinook salmon spawners (Pahlke and Etherton 1999). Genetic stock identification (GSI) has provided insight germane to stock specific run timing and relative abundance in 2008, 2010, and 2012-13 to complement radio telemetry studies cited above (PSC 2015).

Over the past several years, core agency (DFO and ADF&G) funding has been reduced and as a result aerial surveys of the Little Tahltan River were terminated in 2004, and in 2014 the Little Tahltan weir project was reduced in scope. Moreover, the weir program on the Little Tahltan River has recently been questioned as to its long term feasibility given its high cost and the potential of lower cost aerial survey counts serving as a surrogate to collect spawning escapement estimates. (Analysis has shown that the aerial survey counts are significantly correlated ($r^2$ = 0.86; df=18) with the Little Tahltan weir counts. Aerial survey counts were collected from the Little Tahltan River and other upper Stikine reach spawning sites including the Tahltan River and Beatty Creek from 1979 to 2004, Table 1. Except for a Stikine River Chinook spawning site located on the US reach of the Stikine River, there is a paucity of aerial survey counts from sites located within the lower reach of the Canadian section of the Stikine River. Two sites in particular support a sizeable spawning escapement of Chinook salmon; namely, the Verrett River and the Christina Creek sites (Smith et al. 2007). These two sites coincide with one of the two Stikine River Chinook conservation units identified through Canada's wild salmon policy (DFO 1995) It is important, therefore, to better monitor these sites thus providing, over the long term, a measure of the relative spawning numbers (indicator stocks) returning to these sites on an inter-annual basis. Furthermore, aerial surveys of these lower reach sites serves to validate system wide escapement generated from the annual mark-recapture programme and provide surveyors with the opportunity to assess the areas for landscape changes; the surveys also provide the opportunity to investigate other non-target spawning sites while in en-route to select sites (increased costs to do short, additional surveys are marginal).

The following paper reports on the findings of a Stikine River Chinook salmon aerial survey project conducted on the 05 August 2014. The data is compared and contrasted with past surveys conducted at select sites from 1979 to 2004. The efficacy of the project and recommendation are also presented.

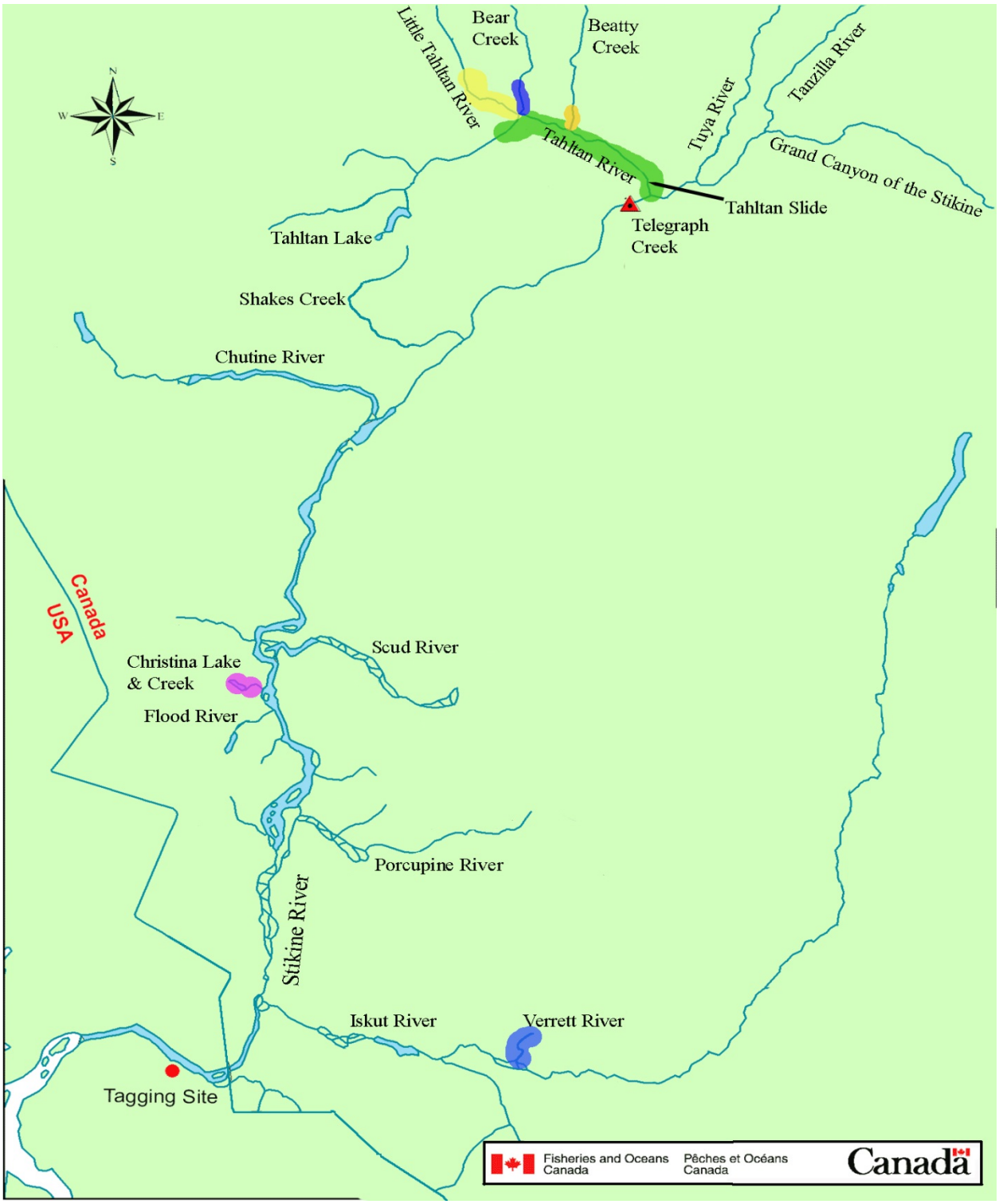


**Figure 1. The lower to mid reach of the Stikine River drainage in British Columbia and Southeast Alaska, showing Chinook salmon aerial survey sites observed in 2014.**

# 2 Methods

Pacific Western's Bell 206 Jet Ranger helicopter was charted through DFO's contractual policy for a total of 7 hrs on 05 August 2014. The helicopter departed Dease Lake, B.C. at 0900 hrs and returned at approximately 1600 hrs. (Dease Lake is approximately 80 km north of the survey site.) Two surveyors sat in tandem on the starboard side of the helicopter thus approximating viewing conditions. Survey speed varied from a stationary hovering position to approximately 20 km/hr. Altitude of surveys varied from 30 to 100 metres.

Survey conditions were subjectively assessed based on water clarity, water flow regime, overhanging foliage, glare, and, to a lesser degree, air turbulence. Surveyors counted individual live fish and noted their activity (spawning pairs, schooled). Carcasses were also enumerated. Ancillary information relating to bear, wolf, and eagle sightings were tabulated.

At the termination of the survey, the counts taken from the two surveyors were tallied and the average of the two counts was adopted as the number of utility. The total count included both large Chinook salmon (>735 mm fork length) and smaller jack Chinook salmon. An inferred contribution of the two size groups was calculated based on the ratio of large to jack Chinook salmon enumerated at the Little Tahltan weir in 2014.

In preparation for the survey Pacific Western Helicopters Ltd. was notified a fortnight in advance of the flight time and the appropriate booking was made. Jet A helicopter fuel was staged at a strategic site within the flight path of the survey well in advance of the survey date. Table 2 lists the locations and defines the boundaries of the survey zone for each of the spawning sites. The total distance covered over the course of the project was approximately 400 km, Fig 1.

Only one flight was conducted in 2014, whereas two flights were budgeted for.

# 3 Results and Discussion

The survey condition were mixed in that some of the survey reaches were done under weather conditions that were compatible with aerial surveying (no fog or rain, light turbulence) coupled with low, and relatively clear flow regimes; however, water clarity was compromised by turbidity (glacial occlusion), high flows regimes, and glare at select sites, Table 1.

**Table 1. Summary of Chinook salmon counts taken from an aerial survey at select Stikine River chinook spawning sites, 05 August 2014.**

| AREA | STR FIN | CNT live | CNT carc | 2014 DATE | OBSERVERS | DESCRIPTON OF SURVEY AREA | COMMENTS |
|---|---|---|---|---|---|---|---|
| Tahltan River | 1107<br>1215 | 633 | 2 | 05-Aug | Frocklage<br>Etherton | Tahltan River from Decheeka Falls downsrtream to mouth<br>start:58$^0$06.822'//131$^0$19.720<br>end:58$^0$00.655'//130$^0$58.692 | Viewing conditions were moderate; some glacial runoff impairing observation; most fish paired actively spawning; some vacant redds; 27 sockeye observed; three grizzlies observed; 58 bald eagles observed. |
| Little Tahltan River | 1025<br>1102 | 149 | 0 | 05-Aug | Frocklage<br>Etherton | Little Tahltan River from its mouth upstream apporximatey 13km.<br>start:58$^0$07.282'//131$^0$19.124<br>end:58$^0$10.700'//131$^0$28.375 | Viewing conditions were good with low clear water throughout survey; small sections of glare, however, impaired viewing; fish actively spawning; some redds observed; five grizzly bears; 15 bald eagles |
| Beatty Creek | 915<br>925 | 19 | 0 | 05-Aug | Frocklage<br>Etherton | Beatty Creek from its mouth upstream apporximatey 5 km.<br>start:58$^0$06.130'//131$^0$11.271<br>end:58$^0$07.106'//131$^0$10.655 | Viewing conditions were impared by sun glare; due to canyon view altitude was higher than optimal; water clear and low; observed five eagles |
| Christina Creek | 1337<br>1345 | 0 | 0 | 05-Aug | Frocklage<br>Etherton | Christina Creek from its mouth upstream apporximatey 6 km. including the lower 2 km of the inlet stream emptying into Christina Lk.<br>start:57$^0$14.282'//131$^0$50.364<br>end:57$^0$14.709'//131$^0$55.102 | No fish observed. The viewing conditions were very poor due to heavy glacial runoff and over-hanging foilage. |
| Verrett River | 1631<br>1645 | 21 | 2 | 05-Aug | Frocklage<br>Etherton | Verrett River from its mouth upstream to Verrett R. falls, including a secondary channel flowing east<br>start:56$^0$41.488'//131$^0$01.009<br>end:56$^0$42.375'//130$^0$59.470 | Viewing conditions were poor due to high, glacial water; observed a scattering of vacant redds; three black bears, one grizzly, and one eagle observed. |
| TOTALS | | 822 | | | | | |
| estimates large* | | 667 | | | | | |
| estimated jack | | 155 | | | | | |

*based on the percentage of large chinook to jack Chinook salmon (81.2%) observed at the Little Tahltan weir in 2014

A total of 822 Chinook salmon (large and jacks) was observed in the prescribed index areas listed in Table 1.. Both large Chinook salmon (fish measuring >735mm fork length) and "jack" Chinook salmon (fish measuring less than 736 mm fork length) were observed; however, the two size types were not distinguished in the field data. As a surrogate, the percentage of large salmon against the total run counted at the Little Tahltan River weir was applied to the total aerial survey count to provide an estimate of large and jack Chinook salmon observed. The highest concentration large Chinook salmon was observe in the Tahltan River, n=533, Table 1. There were no large Chinook salmon observed at the Christina Creek and only 21 large Chinook salmon observed at the Verrett River index area; the former site had very poor viewing condition due to glacial runoff and overhanging foliage, while the latter site had conditions similar, but not as intense. Approximately 70 per cent (119 large Chinook) of the total Little

Tahltan weir count of 169 large Chinook salmon was observed during the aerial survey, well above the 1985-2004 average of 41 per cent, Appendix A Table A-1 ; Appendix A Fig 1 . This contrast of accuracy rates may be due to the record low return of Chinook salmon transitting the weir resulting in the many small, clearly visible "pockets" of Chinook salmon spawners or migrants observed in the course of the survey (i.e. there were seldom schools of fish holding in a layered pattern, hence individual fish were exposed and easily enumerated). The total count of 533 large Tahltan River Chinook salmon was approximately 31 percent of past surveys conducted at this reach of the river. Notwithstanding the slightly impaired viewing conditions at this site, the relatively poor showing is most probably directly linked to the May 2014 Tahltan River rockslide that effectively blocked immigration of up to 70 percent of Tahltan River origin Chinook salmon.

Only one flight was conducted; hence, it is not certain that this flight coincided with peak spawning presence. Although the budget framework accounted for two surveys, a local catastrophic event; namely, a rockslide, as mentioned above, that occurred near the mouth of the Tahltan River, resulted in staff (surveyors) attending to logistics associated with capturing and moving fish around the slide and not being available for an initial Chinook aerial survey.

# 4 Budget and Project Operations

Scheduling and operations did not proceed in full as planned due to reasons articulated above; namely, only one of the two propose surveys were conducted due to time constraints driven by an Area based emergency.

As presented in Appendix 2, the expenditures were well below expected cost. Only $9.6k of the allotted $19.3k was expended or 50 per cent of the budgeted amount. Approximately 95 per cent of the total expenditure was on a helicopter charter, the balance covered travel and miscellaneous costs. No funding went toward staging of helicopter fuel as some fuel had been staged at a strategic site by another project in 2013 and permission was given to use this fuel. There was an expectation, however, that this fuel would be replaced, unfortunately it was not. The recharging of the fuel depot in 2015 is anticipated. A summary of expenditures in relation to forecasted amounts is as follows:

a) Helicopter (Bell 206 Jet Ranger) fuel and travel

- Total cost: $8,154 (amount budgeted $16,800)

b) Site Support

- Miscellaneous: $1,419 (amount budgeted $2,500)

# 5 Conclusion

The project was not fulfilled in its entirety in that only one of the scheduled two surveys was conducted. Total counts at peak spawning, therefore, were not determined. The ratio of aerial survey counts against the Little Tahltan weir counts observed in in 2014 should be used with a measure of scepticism given that only one survey was executed.

The aerial survey counts of the main stem Tahltan River were valuable in providing information on the spawning distribution of the species, i.e. found that spawners were located at many and varied sites from near the mouth of the river upstream to Decheeka Falls. The survey also provided timely insight into migration success of Chinook salmon around the May 2014 rockslide. These data were used in post season analysis and stake holder and agency meetings.

# 6 Recommendations

Given that the importance of realizing the survey objectives which are to provide Chinook counts from index sites in both the upper (Little Tahltan, Tahltan, and Beatty) and lower reaches (Christina and Verrett) of the Stikine River which loosely corresponds to DFO's wild salmon policy prescribed conservation units (stocks), in concert with augmenting the current Little Tahltan weir to aerial survey count ratio, and providing some measure of validation of the system wide mark-recapture based escapement estimates, it is highly recommended that these surveys continue. Moreover, the surveys of the Tahltan River gain special importance in light of the 2014 rockslide. Survey counts above the slide will provide insight as to salmon access conditions at the landslide site. It is further recommended that surveys be conducted as early as possible during the day and before peak glacial melt is manifest, thus capitalizing on opportune viewing conditions in glacier fed systems. (To note: this recommendation is not germane to the Little Tahltan index site given that this system has minor glacial runoff inputs.) Finally, it is imperative that planning and scheduling for the surveys start in early June to ensure helicopter availability and provide time for helicopter fuel placement and surveyor scheduling.

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Smith, J.J., D. Robichaud, M. Mathews, P. Etherton, B. Waugh, and K. Jensen. 2007. Mark-recapture and radiotelemetry studies of Stikine River adult salmon, 2000-2005. Pacific Salmon Comm. Tech.Rep. No X: X p.

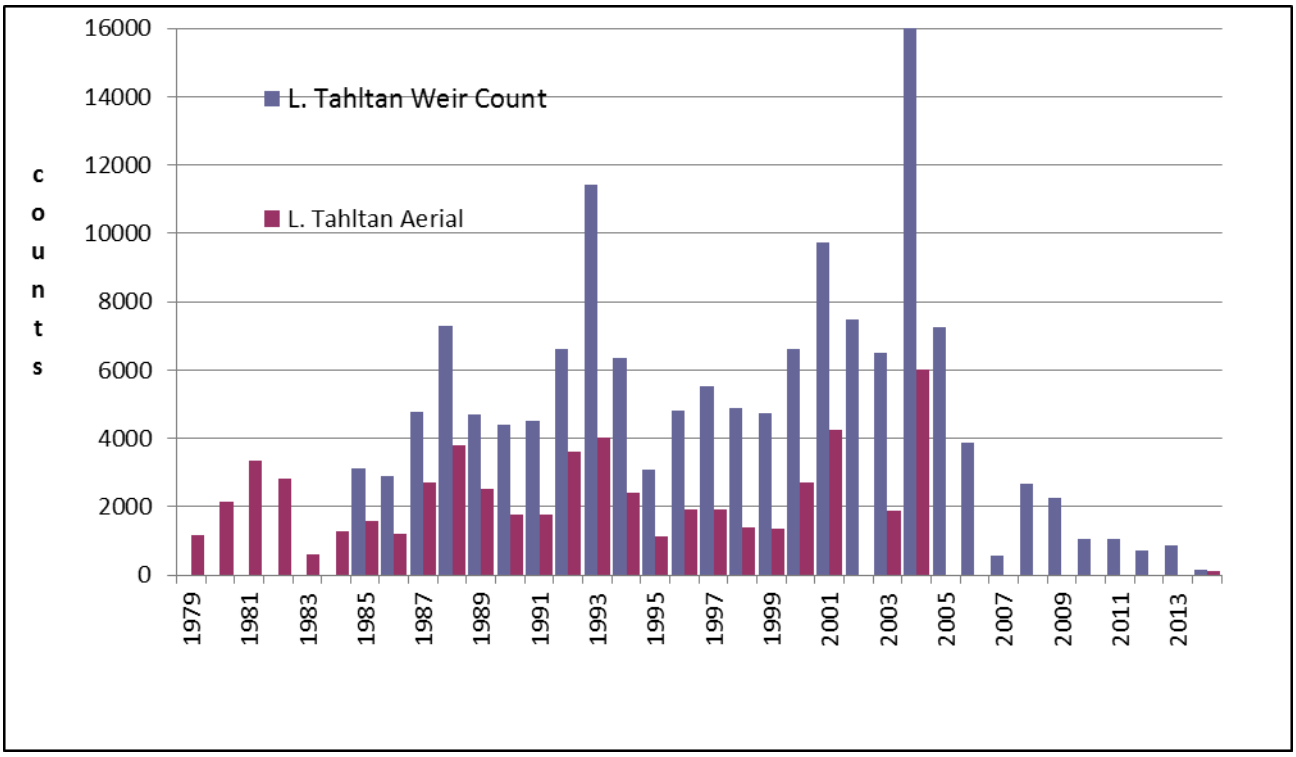
***Appendix A: Table of total run size and escapement estimates, Stikine River Chinook salmon, 1979-2014.***

**Appendix A- 1 Run size and escapement of Stikine River chinook salmon based on mark-recapture, foot survey and aerial survey estimates, 1979-2014.**

| Year | Little Tahltan Weir | Little Tahltan Aerial | Tahltan Aerial | Beatty Aerial | Aerial count: L.Tahltan % of total weir |
|---|---|---|---|---|---|
| 1979 | | 1166 | 2118 | | |
| 1980 | | 2137 | 960 | 122 | |
| 1981 | | 3334 | 1852 | 558 | |
| 1982 | | 2830 | 1690 | 567 | |
| 1983 | | 594 | 453 | 83 | |
| 1984 | | 1294 | | 126 | |
| 1985 | 3114 | 1598 | 1490 | 147 | 51.32% |
| 1986 | 2891 | 1201 | 1400 | 183 | 41.54% |
| 1987 | 4783 | 2706 | 1390 | 312 | 56.58% |
| 1988 | 7292 | 3796 | 4384 | 593 | 52.06% |
| 1989 | 4715 | 2527 | | 362 | 53.59% |
| 1990 | 4392 | 1755 | 2134 | 271 | 39.96% |
| 1991 | 4506 | 1768 | 2445 | 193 | 39.24% |
| 1992 | 6627 | 3607 | 1891 | 362 | 54.43% |
| 1993 | 11425 | 4010 | 2249 | 757 | 35.10% |
| 1994 | 6360 | 2422 | | 184 | 38.08% |
| 1995 | 3072 | 1117 | 696 | 152 | 36.36% |
| 1996 | 4821 | 1920 | 772 | 218 | 39.83% |
| 1997 | 5547 | 1907 | 260 | 218 | 34.38% |
| 1998 | 4873 | 1385 | 587 | 125 | 28.42% |
| 1999 | 4733 | 1379 | | | 29.14% |
| 2000 | 6631 | 2720 | | | 41.02% |
| 2001 | 9730 | 4258 | | | 43.76% |
| 2002 | 7476 | | | | |
| 2003 | 6492 | 1903 | | | 29.31% |
| 2004 | 16381 | 6014 | | | 36.71% |
| 2005 | 7253 | | | | |
| 2006 | 3860 | | | | |
| 2007 | 562 | | | | |
| 2008 | 2663 | | | | |
| 2009 | 2245 | | | | |
| 2010 | 1057 | | | | |
| 2011 | 1058 | | | | |
| 2012 | 720 | | | | |
| 2013 | 878 | | | | |
| 2014* | 169 | 121 | 514 | 15 | 71.63% |
| per cent avg | | 5.34% | 31.33% | 5.30% | |
| Averages | | | | | |
| 1985-2013 | 5040 | 2374 | n/a | n/a | n/a |
| 1979-2004 | n/a | 2374 | n/a | n/a | 41.10% |
| 1979-1998 | n/a | 2266 | 1642 | 291 | 42.92% |
| 1985-2004 | 6293 | 2526 | 1642 | 291 | 41.34% |

** used large to jack ratio observed at the weir as a proxy to discriminate large and jacks from the aerial survey results. The total combined count of large and jack Chinook salmon was 149 L. Tahltan, 633 Tahltan River and 19 Beatty Creek.*

**Appendix A-2 1. Aerial survey counts versus Little Tahltan River weir counts of chinook salmon, 1985-2014.**



## *Appendix B: Financial Summary*

# Project Budget Form

**Name of Project:** **2013 - 2015 Stikine River Chinook Salmon Aerial Surveys (2014 budget)**

| ELIGIBLE COSTS | | | | | TOTAL PROJECT BUDGET | OTHER FUNDING | PSC N. FUND GRANT AMOUNT | Monies Expended |
|---|---|---|---|---|---|---|---|---|
| **Labour** | | | | | | | | |
| **Wages & Salaries** | | | | | | | | |
| Position | # of crew | # of work days | hrs per day | rate per hour | **Total (In-kind & cash + PSC Amount )** | **In-Kind & Cash** | **PSC Amount** | **Spent** |
| Senior technician (DFO Eg-5) | 1 | 12 | 7.5 | 35 | $3,150 | $3,150 | | |
| Senior technician (DFO Eg-5) | 1 | 12 | 7.5 | 35 | $3,150 | $3,150 | | |
| Fisheries technician (DFO Eg-3) | 1 | 5 | 7.5 | 32 | $1,200 | $1,200 | | |
| Financial officer (DFO As-2) | 1 | 1 | 7.5 | 30 | $225 | $225 | | |
| | | | | | $0 | $0 | | |
| Person Days (# of crew x work days) | | 30 | | **sub total** | $7,725 | $7,725 | $0 | $0 |
| **Labour - Employer Costs ( percent of wages subtotal amount )** | | | | | | | | |
| | rate | 20% | | **sub total** | $1,545 | $1,545 | $0 | $0 |
| **Subcontractors & Consultants** | # of crew | # of work days | hrs per day | rate per hour | | | | |
| Helicopter Fuel Haul (includes boat charter) | | | | | $3,000 | | $3,000 | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| Insurance if applicable | rate | 0% | | | | | | |
| | | | | **sub total** | $3,000 | $0 | $3,000 | $0 |
| **Volunteer Labour** | # of crew | # of work days | hrs per day | | | | | |
| Skilled | | | | | | | | |
| Un-skilled | | | | | | | | |
| Insurance if applicable | rate | 0% | | | | | | |
| | | | | **sub total** | | | | |
| | | | | **Total Labour Costs** | $12,270 | $9,270 | $3,000 | $0 |
| **Site / Project Costs** | **Provide details in the space below (use an additional page if needed )** | | | | | | | |
| Travel (do not include to & from work) | Helicopter charters and per diems | | | | $13,800 | | $13,800 | $8,154 |
| Small Tools & Equipment | | | | | | | | |
| Site Supplies & Materials | Helicopter fuel | | | | $2,500 | | $2,500 | $1,420 |
| Equipment Rental | | | | | | | | |
| Work & Safety Gear | | | | | | | | |
| Repairs & Maintenace | | | | | | | | |
| Permits | | | | | | | | |
| Technical Monitoring | | | | | | | | |
| Other site costs | | | | | | | | |
| | | | | **Total Site / Project Costs** | $16,300 | $0 | $16,300 | $9,573 |

# Project Budget Form (continued)



| ELIGIBLE COSTS | | | | BUDGET | OTHER FUNDING | CONTRIBUTION FUNDING | |
|---|---|---|---|---|---|---|---|
| **Training (e.g Swiftwater, bear aware, electrofishing, etc).** | | | | **Total (PSC + In-kind + cash)** | **In-Kind & Cash** | **PSC Amount** | **Spent** |
| Name of course | # of crew | # of days | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | **Total Training Costs** | - | - | - | - |
| **Overhead / Indirect Costs** | | | | | | | |
| Office space; including utilities, etc. | | | | 800 | 800 | | |
| Insurance | | | | | | | |
| Office supplies | | | | 100 | 100 | | |
| Telephone & long Distance | | | | 100 | 100 | | |
| Photocopies & printing | | | | | | | |
| Indirect/overhead costs | | | | | | | |
| (If the PSC contribution to Indirect costs exceeds 20% of the total PSC grant | | | | | | | |
| you will be required to submit back-up documentation justifying the expense). | | | | | | | |
| Other overhead costs | Shipping | | | | | - | - |
| | | | **Total Overhead Costs** | 1,000 | 1,000 | - | - |

**Capital Costs / Assets** — **Provide details in the space below (use an additional page if needed )**

Assets are things of value that have an initial cost of $250 or more and which can be readily misappropriated for personal use or gain or which are not, or will not be, fully consumed during the term of the project.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | **Total Capital Costs** | | | | |
| | | | **Project Total Costs** | 29,570 | 10,270 | 19,300 | 9,573 |

| | |
|---|---|
| **Balance** | $9,727 |
| Fund Rec'd* | $17,370 |
| Funds owing to PSC | $7,797 |

## Budget Summary

**(PSC + in-kind + cash)**

| | | |
|---|---|---|
| **Total Labour Costs** | | $12,270 |
| **Total Site / Project Costs** | | $16,300 |
| **Total Training Costs** | | $0 |
| **Total Overhead Costs** | | $1,000 |
| **Total Capital Costs** | | $0 |
| | **Project Total** | $29,570 |

*** 90 percent of PSC contribution**

Report: ALYD100F

FY: 2014-2015

Fiscal Period: 12



# Assets and Liabilities
## DETAILED TRANSACTIONS
### by Responsibility Centre, Project, Allotment and Line Object
### Report as of March 31, 2015

| Vendor Name / Customer Name | Invoice Number/ Misc.Receipt | Batch Name | Transaction Description | PO Number / Receipt Number | Invoice Date / Misc. Receipt Date | Bus. Line | Allot Code | Lobj Code | Invoice Amount |
|---|---|---|---|---|---|---|---|---|---|
| REGION: Pacific | | | | | | | | | |
| RESPONSIBILITY CENTRE: 5F500 Manager, Stock Assessment (Alsek, Taku, Stikine Rivers) | | | | | | | | | |
| PROJECT: 55681 | | | | | | | | | |
| MYLES SAMPSON | 100-62 | 170_MV_CONNECTOR:1 8380 | Boat charter services to DFO camp - Jul. 17/14. Inv# 100-62. | | 17-JUL-14 | 810 | 750 | 0520 | (960.00) |
| MYLES SAMPSON | 100-62 | 170_MV_CONNECTOR:1 8380 | Boat charter services to DFO camp - Jul. 17/14. Inv# 100-62. | | 17-JUL-14 | 810 | 750 | 0520 | 960.00 |
| | | TOTAL LINE OBJECT: | 0520 Ship Charters other than on travel status (incl. Basic Cost & all Related Costs) | | | | | | .00 |
| PACIFIC SALMON COMMISSION | H01292C7A | Receivables A 1256270 12567031 | Misc rect misc cash, RCT# H01292C7A Rect Date: 14-MAY-14 Bnk- HUB Bnk Acc- 0700-232b7-NB | H01292C7A | 14-MAY-14 | 810 | 750 | 3211 | (17,370.00) |
| | | TOTAL LINE OBJECT: | 3211 Collaboration as per s. 33 of the Oceans Act/s.4.4 of the Fisheries Act ¿ Funds | | | | | | (17,370.00) |
| PACIFIC SALMON COMMISSION | REQ150316 | 170_MV_CONNECTOR:2 4804 | REFUND UNSPENT COLLABORATIVE AGREEMENT | | 16-MAR-15 | 810 | 750 | 3C11 | 7,797.85 |
| | | TOTAL LINE OBJECT: | 3C11 Collaboration as per s. 33 of the Oceans Act/ s.4.4 of the Fisheries Act ¿ Unrec | | | | | | 7,797.85 |
| PACIFIC WESTERN HELICOPTERS LTD | 3009193 | XXGAC 30-SEP-2014 XXGAC Actual A 497321 12930220 | PACIFIC WSTRN HELICOPT//WAUGH BILL//FUEL FOR STIKINE RIVER CHARTER FOR AERIAL SURVEYS OF SELECT CHINOOK SPAWNING SITES - AUG 5/14//Acquisition Card - carte d'achat | F1624-145320 | 19-SEP-2014 | 810 | 750 | 7101 | 6.00 |
| PACIFIC WESTERN HELICOPTERS LTD | 3009193 | XXGAC 30-SEP-2014 XXGAC Actual A 497321 12930220 | PACIFIC WSTRN HELICOPT//WAUGH BILL//FUEL FOR STIKINE RIVER CHARTER FOR AERIAL SURVEYS OF SELECT CHINOOK SPAWNING SITES - AUG 5/14 INV 31968 TICKET 54357//Acquisition Card - carte d'achat | F1624-145320 | 19-SEP-2014 | 810 | 750 | 7101 | 1,419.53 |
| PACIFIC WESTERN HELICOPTERS LTD | 3009193 | XXGAC 30-SEP-2014 XXGAC Actual A 497321 12930220 | PACIFIC WSTRN HELICOPT//WAUGH BILL//Reversal (3009193-5999717) FUEL FOR STIKINE RIVER CHARTER FOR AERIAL SURVEYS OF SELECT CHINOOK SPAWNING SITES - AUG 5/14//Acquisition Card - carte d'achat | F1624-145320 | 19-SEP-2014 | 810 | 750 | 7101 | (6.00) |
| PACIFIC WESTERN | 3009193 | XXGAC 30-SEP-2014 | PACIFIC WSTRN | F1624-145320 | 19-SEP-2014 | 810 | 750 | 7101 | 1,419.53 |

This report provides a listing of all year-to-date assets and liabilities by Responsibility Centre, Project, Allotment and Line Object.

Filter used to generate Report: NBX,PRJ_CODE = '55681'AND NBX,ALLT_CODE = '750'

## Assets and Liabilities
## DETAILED TRANSACTIONS
### by Responsibility Centre, Project, Allotment and Line Object
### Report as of March 31, 2015

| Vendor Name / Customer Name | Invoice Number/ Misc.Receipt | Batch Name | Transaction Description | PO Number / Receipt Number | Invoice Date / Misc. Receipt Date | Bus. Line | Allot Code | Lobj Code | Invoice Amount |
|---|---|---|---|---|---|---|---|---|---|
| REGION: Pacific | | | | | | | | | |
| RESPONSIBILITY CENTRE: 5F500 Manager, Stock Assessment (Alsek, Taku, Stikine Rivers) | | | | | | | | | |
| HELICOPTERS LTD | | XXGAC Actual A 497321 12930220 | HELICOPT//WAUGH BILL//FUEL FOR STIKINE RIVER CHARTER FOR AERIAL SURVEYS OF SELECT CHINOOK SPAWNING SITES - AUG 5/14//Acquisition Card - carte d'achat | | | | | | |
| PACIFIC WESTERN HELICOPTERS LTD | 3009193 | XXGAC 30-SEP-2014 XXGAC Actual A 497321 12930220 | PACIFIC WSTRN HELICOPT//WAUGH BILL//Reversal (3009193-5999707) FUEL FOR STIKINE RIVER CHARTER FOR AERIAL SURVEYS OF SELECT CHINOOK SPAWNING SITES - AUG 5/14 INV 31968 TICKET 54357//Acquisition Card - carte d'achat | F1624-145320 | 19-SEP-2014 | 810 | 750 | 7101 | (1,419.53) |
| | | TOTAL LINE OBJECT: | 7101 Fuel for Aircraft/Hovercraft | | | | | | 1,419.53 |
| | 2984617 | XXGAC 12-AUG-2014 XXGAC Actual A 493671 12782950 | G. HOLMES CONTRACTING//ETHERTON PETER//FUEL FOR UNIT 10-807 ARI NOT TAKEN//Acquisition Card - carte d'achat | | 06-AUG-201 | 810 | 750 | 7184 | 57.57 |
| | 2984615 | XXGAC 12-AUG-2014 XXGAC Actual A 493671 12782950 | TAHLTAN CENTRE LTD//ETHERTON PETER//FUEL FOR UNIT 10-807 ARI NOT TAKEN//Acquisition Card - carte d'achat | | 06-AUG-201 | 810 | 750 | 7184 | 106.70 |
| | | TOTAL LINE OBJECT: | 7184 Gasoline (excl. Boats & Small Craft) | | | | | | 164.27 |
| PACIFIC WESTERN HELICOPTERS LTD | 3009193 | XXGAC 30-SEP-2014 XXGAC Actual A 497321 12930220 | PACIFIC WSTRN HELICOPT//WAUGH BILL//Reversal (3009193-5999706) STIKINE RIVER CHARTER FOR AERIAL SURVEYS OF SELECT CHINOOK SPAWNING SITES - AUG 5/14 INV 31968 TICKET 54357//Acquisition Card - carte d'achat | F1624-145320 | 19-SEP-2014 | 810 | 750 | T513 | (7,604.84) |
| PACIFIC WESTERN HELICOPTERS LTD | 3009193 | XXGAC 30-SEP-2014 XXGAC Actual A 497321 | PACIFIC WSTRN HELICOPT//WAUGH BILL//STIKINE | F1624-145320 | 19-SEP-2014 | 810 | 750 | T513 | 7,604.84 |

Report: ALYD100E

FY: 2014-2015

Fiscal Period: 12



## Assets and Liabilities
## DETAILED TRANSACTIONS
### by Responsibility Centre, Project, Allotment and Line Object
### Report as of March 31, 2015

| Vendor Name / Customer Name | Invoice Number/ Misc.Receipt | Batch Name | Transaction Description | PO Number / Receipt Number | Invoice Date / Misc. Receipt Date | Bus. Line | Allot Code | Lobj Code | Invoice Amount |
|---|---|---|---|---|---|---|---|---|---|
| REGION: Pacific | | | | | | | | | |
| RESPONSIBILITY CENTRE: 5F500 Manager, Stock Assessment (Alsek, Taku, Stikine Rivers) | | | | | | | | | |
| PACIFIC WESTERN HELICOPTERS LTD | 3009193 | 12930220<br>XXGAC 30-SEP-2014<br>XXGAC Actual A 497321<br>12930220 | RIVER CHARTER FOR AERIAL SURVEYS OF SELECT CHINOOK SPAWNING SITES - AUG 5/14//Acquisition Card - carte d'achat<br>PACIFIC WSTRN HELICOPT//WAUGH BILL//STIKINE RIVER CHARTER FOR AERIAL SURVEYS OF SELECT CHINOOK SPAWNING SITES - AUG 5/14 INV 31968 TICKET 54357//Acquisition Card - carte d'achat | F1624-145320 | 19-SEP-2014 | 810 | 750 | T513 | 7,604.84 |
| | | TOTAL LINE OBJECT: | T513 PS - Core Mandate-Aircraft Charters | | | | | | 7,604.84 |
| ETHERTON, PETER | 18713-C | ER1140912120924 | ALP623623: C'k Stik aerial surveys-2 | | 07-AUG-201 | 810 | 750 | T515 | 383.51 |
| | | TOTAL LINE OBJECT: | T515 PS - Core Mandate - Travel Expenditures within Canada excluding headquarte | | | | | | 383.51 |
| | | TOTAL ALLOTMENT: | 750 Collaborative arrangements as per s. 33 of the Oceans Act/s.4.4 of the Fisherie | | | | | | .00 |
| TOTAL PROJECT: 55681 Stikine River Chinook Aerial Surveys | | | | | | | | | .00 |
| TOTAL RESPONSIBILITY CENTRE: 5F500 Manager, Stock Assessment (Alsek, Taku, Stikine Rivers) | | | | | | | | | .00 |
| TOTAL REGION: Pacific | | | | | | | | | .00 |
| | | | | | | | | Grand Total: | .00 |

This report provides a listing of all year-to-date assets and liabilities by Responsibility Centre, Project, Allotment and Line Object.

Filter used to generate Report: NBX.PRJ_CODE = '55681'AND NBX.ALLT_CODE = '750'

## *Appendix C: Photographs*

**Appendix C- 1. Verrett River near mouth, 2014.**

**Appendix C- 2. Little Tahltan River weir, 2014.**

**Appendix C- 3. Decheeka Falls, Tahltan River, starting point of the Tahltan River aerial survey, 2014.**

**Appendix C- 4. Cheri Frocklage, aerial survey participant and manager of the Tahltan/Iksut First Nations fisheries department, 2014.**