

**2006 CHUM SALMON
TAG RECOVERY PROJECT
YUKON RIVER
(MINTO TO FORT SELKIRK)
CRE-29-06**



Prepared for:
YUKON RIVER PANEL
and
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ABSTRACT

The Department of Fisheries and Oceans Canada has conducted tagging programs on migratory Pacific salmon populations in the upper Yukon River drainage since 1982. Chum salmon are marked with spaghetti tags at two fish wheels located near the Yukon-Alaska border. The purpose of the tagging and subsequent tag recovery is to estimate the size of the chum spawning migration into Canada using marked to unmarked ratios. Yearly spawning migration estimates are used to monitor the relative long term run size of the chum salmon population in the Yukon River in Canada.

During October of 2006, the Selkirk First Nation recovered spaghetti tags from post-spawn chum salmon in the Minto index area of the Yukon River near Pelly Crossing, Yukon. Spaghetti tags were recovered through foot and boat surveys at several known chum spawning locations. The survey recovered or observed a total of 50 spaghetti tags, of which 45 were of Canadian origin and 5 originated from US tagging programs. The Canadian chum salmon tagged to untagged ratio for Canadian tagged chum for 2006 was 40.1 fish for the Minto index area. Based on this ratio the Canadian Yukon River chum border escapement is estimated to be $155,060 \pm 55,300$ fish in 2006.

TABLE OF CONTENTS

ABSTRACT.....	i
TABLE OF CONTENTS.....	ii
INTRODUCTION	1
METHODS	2
RESULTS and DISCUSSION.....	3
Environmental Conditions	3
Chum Salmon Tag Recoveries	3
Tag Recovery Timing	5
Chum Salmon Spawning Sites.....	5
REFERENCES	7
PERSONAL COMMUNICATION	7
ACKNOWLEDGEMENTS.....	8

LIST OF FIGURES

Figure 1 Yukon River (Minto Index Area) chum salmon tag recovery sites.....	9
Figure 2 Comparison of water discharge for Yukon River 2002-2006.	10

LIST OF TABLES

Table 1 Summary of the results from chum salmon enumeration surveys and tag recoveries, 2006.	5
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APPENDIX I Survey Waypoints

APPENDIX II 2006 Chum Salmon Recovery Data

APPENDIX III 2006 Chum Salmon Biological Data

INTRODUCTION

A chum salmon spawning ground tag recovery program has been conducted annually on the Yukon River between Minto and Fort Selkirk, Yukon since the late 1990s. It is one of several assessment programs for chum salmon that are conducted within Canadian portion of the upper Yukon River mainstem. This project was administered by the Selkirk District Renewable Resource Council (SRRC) with field assistance provided by members of the Selkirk First Nation (SFN) from the community of Pelly Crossing in south central Yukon. The involvement of the SRRC and SFN members in community based fisheries management projects has recently expanded as a result of the finalization of the SFN Final Agreement and the Canada-US Yukon River Salmon Agreement. Combined, these agreements have been influential in increasing awareness of local issues while building the capacity to initiate and participate in various fisheries management projects throughout the SFN Traditional Territory. In addition to providing local jobs and benefits to the community of Pelly Crossing, this project identifies important chum spawning habitat for consideration in ongoing land use planning initiatives in the area. The Minto area is especially active with the development of the Minto Mine that is targeted to be in a production phase during the summer of 2007.

The Yukon River Salmon Agreement specifically funds programs in Canada and the United States which focus on the restoration, conservation and enhancement of Canadian-origin salmon stocks. Included in this agreement is funding for projects directed at developing stewardship of salmon habitat and maintaining viable fisheries within the Yukon River drainage. Through various projects in both countries there is hope that sustainable salmon fisheries can continue along the Yukon River over the long-term and that salmon returns can once again approach historic levels. In that effort, a stock rebuilding program for Canadian origin chum along the Yukon River continues to be a management goal of DFO (Milligan, pers.com., 2006). The means of measuring success or failure of this program are mark-recapture estimates that establish yearly abundance estimates that, in turn, are used to monitor temporal trends.

Chum stocks have been weak since 1997 however since 2003 stock strength was considered sufficient to allow for a commercial fishery in the Yukon River in Canada. As part of the management of the chum population in Canada a mark-recapture tagging

program is initiated each year and used as the primary tool for estimating border escapement. In years past, when the commercial fishery was closed for conservation purposes, management biologists found that abundance estimates without the fishery were more difficult to derive. In response, an alternate method to estimate chum abundance was explored in the late 1990s. This involved the recovery of tags at known chum spawning sites for use in deriving an alternative estimate of border escapement. In summary, the primary objective of this project is to determine if tagged to untagged ratios in the Minto index area can be used as a proxy to estimate border escapement. Tag ratios are derived through the enumeration of spawning fish and recovery of spaghetti tags at known spawning sites in the Yukon River between Minto Landing and Fort Selkirk, Yukon (Figure 1 and Appendix I).

METHODS

Spaghetti tags applied by DFO to chum salmon at fish wheels near the Yukon-Alaska border were recovered through a combination of foot surveys and drifting over known spawning locations on the Yukon River between Minto and the confluence of the Pelly River at Fort Selkirk (Figure 1). Tag recovery work was conducted between October 13 and 17, 2006 during a period that was well after the peak spawning. Spawning locations were found using previously referenced coordinates using a hand held Garmin 76CS GPS and, in addition, new areas were suggested by SFN staff. All sites were accessed using a boat and outboard motor. Tags were collected and carcasses were enumerated by surveying the shoreline perimeter of the spawning area by foot. For the carcass tally, only heads were enumerated to avoid duplication. The sex, spawning condition, visual inspection for mark (adipose clip, adipose and caudal punch) and a measurement of both mid-eye fork and post orbital hypural length (± 5 mm) were recorded on only those carcasses that were whole. The higher water stage in 2006 allowed most of the deeper spawning locations to be accessed by boat. At locations where significant numbers of schooling chum were observed, enumeration was performed through the use of the boat and tally counter to simply drift over spawning aggregations. At these sites a minimum of three drifts were made with all live fish and carcasses on the slough bottom being counted. The number of live spaghetti tagged

chum was also noted during each enumeration. A second observer surveyed the stream bed for loose tags which were recovered using a gaff.

RESULTS AND DISCUSSION

Environmental Conditions

Field work in 2006 was performed under excellent weather conditions. The absence of snow made locating tags along the shoreline of spawning sites effective. Snow and ice can dramatically influence tag recoveries and enumeration estimates. A ground cover of snow in any particular year can significantly skew ratios of tagged to untagged fish. As such, all efforts were made in 2006 to complete the project before snow accumulated on the ground. The mild temperatures also prevented the formation of ice that would otherwise have hampered access to the sloughs. The higher stage of the Yukon River allowed easy boat access to all of the spawning sites and enumeration of schools of spawning chum salmon. Water temperatures ranged from 3 to 5°C over the spawning dunes during the project. The weather was seasonally warm and above average in temperature during the survey period.

Chum Salmon Tag Recoveries

Nine sites were inspected for spaghetti tags (Figure 1 and Appendix I) between October 13 and 17, 2006. Combined, these sites resulted in the enumeration of 1,405 chum salmon in varying condition. A total of 735 spawning fish were enumerated by boat during drifts over spawning aggregations. The balance, or 670 fish, were carcasses enumerated along the shoreline during foot surveys at each of the spawning sites. Many of those carcasses were not whole fish, having been scavenged by wildlife such as eagles, ravens and bears. Chum heads and jaw bones were often the only remains observed along the shoreline.

A total of 50 spaghetti tags were recovered or observed of which 45 were orange and of Canadian origin. Of the 45 Canadian tags, 35 were from the current tagging year and used to calculate a tagged to untagged ratio (Table 1). In addition, a total of 5 US tags were recovered during the project. All US tags were singularly applied yellow, pink or white spaghetti tags. All tag recoveries were either found along the shoreline,

attached to carcasses, or lying submerged on the bottom of sloughs (Appendix II). Unrecovered tags represented those observed on live fish during drifts at each of the spawning sites.

As was the case in previous years tags on live fish were fewer relative to those collected along the shoreline or found on the bottom of sloughs (Table 1). This is reflected in the resulting tag ratio of 81.7 live fish per tag. Unattached tags were collected in both the water and along the shoreline in equal proportions resulting in a tag ratio of 25.8 carcasses per unattached tag. Combining all Canadian 2006 tag data for each spawning site the tagged to untagged ratio of chum salmon for the Minto index area was 40.1 fish per tag.

Using the previously established relationship between the Minto index tag ratios and the Canadian border escapement an estimate of $155,060 \pm 55,350$ chum salmon (95% confidence interval) was determined for 2006. This relationship, expressed as an equation (escapement estimate = $4,103.2$ tag ratio - $9,653.8$; $R^2 = 0.9584$), was derived from previous tag ratio determinations for the Minto index area and border escapement estimates established from mark recapture programs in the commercial fishery in Dawson City, Yukon (SRRC 2005). The current estimate is well above the Canadian Yukon River fall chum escapement objective of 80,000 fish but below the anticipated escapement estimate of over 200,000 determined by Fisheries and Oceans Canada at the end of September. In 2006, the small commercial fishery and modest tag returns made border escapement estimates using this fishery less reliable (Milligan, pers. com., 2006).

The average run of fish in 2006 enabled a modest number of fresh whole carcasses for sexual determination and visual inspection for tag loss or markings. The male to female sex ratio in a sample of 87 chum salmon along the shoreline was 0.44 males to each female fish (39 males: 48 females). None of the carcasses visually inspected were suspected of tag loss based on inspections of the dorsal fin base and the adipose and caudal fin for hole-punches (Appendix III). With the exception of one tagged carcass found on shore, all tags were unattached with the majority having the appearance of being forcibly removed. While the project failed to capture live tagged fish, the collection of loose unattached tags and the enumeration of live tagged fish were again very successful methods to amass meaningful tag data in 2006.

Table 1 Summary of the results from chum salmon enumeration surveys and tag recoveries from the Minto Index area, 2006.

Enumeration Method	Count	Canadian 2006 Spaghetti Tags Recovered or Observed	Tag Ratio
Chum Carcasses on Shore	670	26**	25.8 fish per tag
Live Chum in Slough*	735	9	81.7 fish per tag
Total	1,405	35	40.1 fish per tag

* orange tags observed and believed to be of Canadian origin

** includes 13 tags found unattached in slough

Tag Recovery Timing

The survey in 2006 was completed during the same statutory week as in 2005 and about 5 days earlier than preceding survey years. It was also evident that the majority of live fish observed at the spawning sites were of poor condition with the shorelines inundated with carcasses. Most of the carcasses were composed of some tissue and skeletal remains scattered along the shoreline with very few whole carcasses observed. This was unlike the situation in 2005 where many whole carcasses were found as scavengers were simply high-grading select parts of the fish especially the eyes. All of the carcasses examined in 2006 were post-spawn fish. Live fish were in noticeably poor condition indicating a late stage of spawning. Many post-spawn female chum were still loosely holding over spawning redds at the time of the survey. On the rare occasion females were seen digging redds in the gravel. This would indicate that spawning activity was well advanced.

Chum Salmon Spawning Sites

The mainstem sloughs of the Yukon River between Minto and Fort Selkirk have long been known as an important chum spawning areas by Selkirk First Nation people as well as local residents. Chum salmon have been historically harvested in a select number of sloughs in this section of river by Selkirk First Nation people for hundreds, if not thousands of years (Gotthardt, pers. com., 2003). While the earlier run of Chinook salmon is generally a more popular fishery for the residents of Pelly Crossing, a small

subsistence fishery for chum salmon continues around the Minto Landing area and along the Pelly River near the community of Pelly Crossing. Local interest in harvesting chum salmon was renewed with the especially strong returns in 2005. In 2006 harvests were modest by comparison and believed to be the result of the smaller spawning run and local employment opportunities at the Minto mine (Brown, pers. com., 2006).

With the high water stage of the Yukon River in 2006 some interesting changes occurred in habitat utilization at the spawning sites in comparison to previous survey years. High utilization of spawning habitat was observed at sites W50-1, W52, W55 and W58. Combined, these sites represented approximately 77 percent of the 2006 Canadian tags recovered or observed during the project. Similar to 2005, sites W53, W54 and W67 had far fewer redds and carcasses than one would expect with the abundance of fish in the system. The poor utilization of these sites can likely be attributed to greater water depths and higher water velocities that did not favour primary selection. Perhaps the most notable change in 2006 was the lack of habitat utilization at site W58-1. This site represents the upper reaches of an important and consistently utilized spawning site known as Big Creek Slough or W58. Site W58-1 was heavily used by spawning chum in 2005. Even though water levels were comparable to 2005, the upper reaches of this slough received marginal use in 2006. This was likely the result of density driven habitat selection in 2005.

Water levels of the Yukon River during the survey in 2006 were once again higher than usual. Yukon River flow data at a water survey station just downstream of the Minto Index area show higher discharge than the previous four years for the period considered to be the peak chum spawning period the latter part of September and through to the middle of October (Figure 2). As in 2005, it is believed the increased water velocities and substrate depths at sites W53 and W67 resulted in less spawning activity at these locations. More established spawning sites continue to be important spawning locations for chum in 2006.

REFERENCES

SRRC. 2005. *2005 Chum Salmon Tag Recovery Project, Yukon River (Minto to Fort Selkirk)*. Prepared for the Yukon River Panel under the Yukon Restoration and Enhancement Fund by the Selkirk Renewable Resource Council.

PERSONAL COMMUNICATION

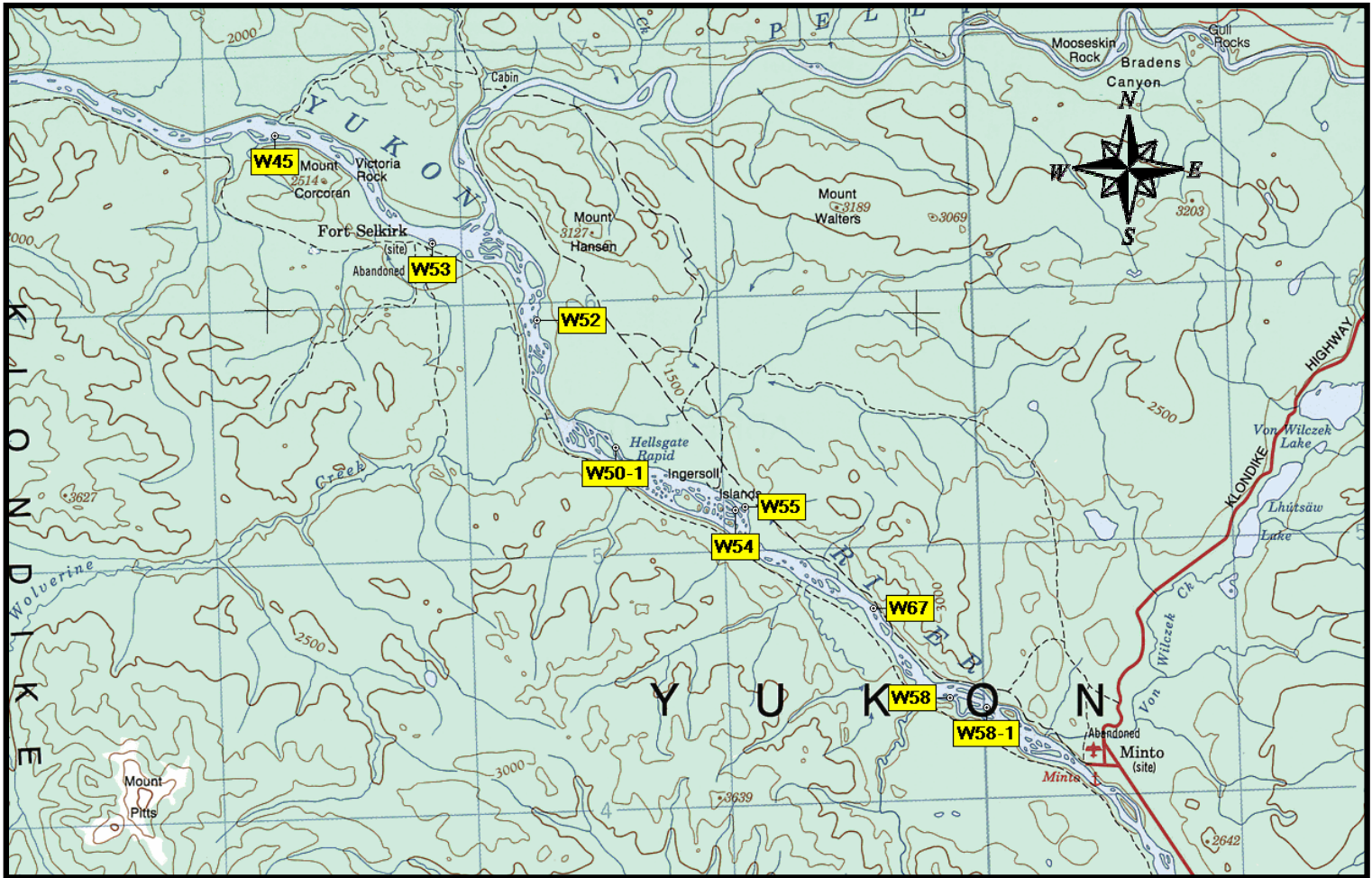
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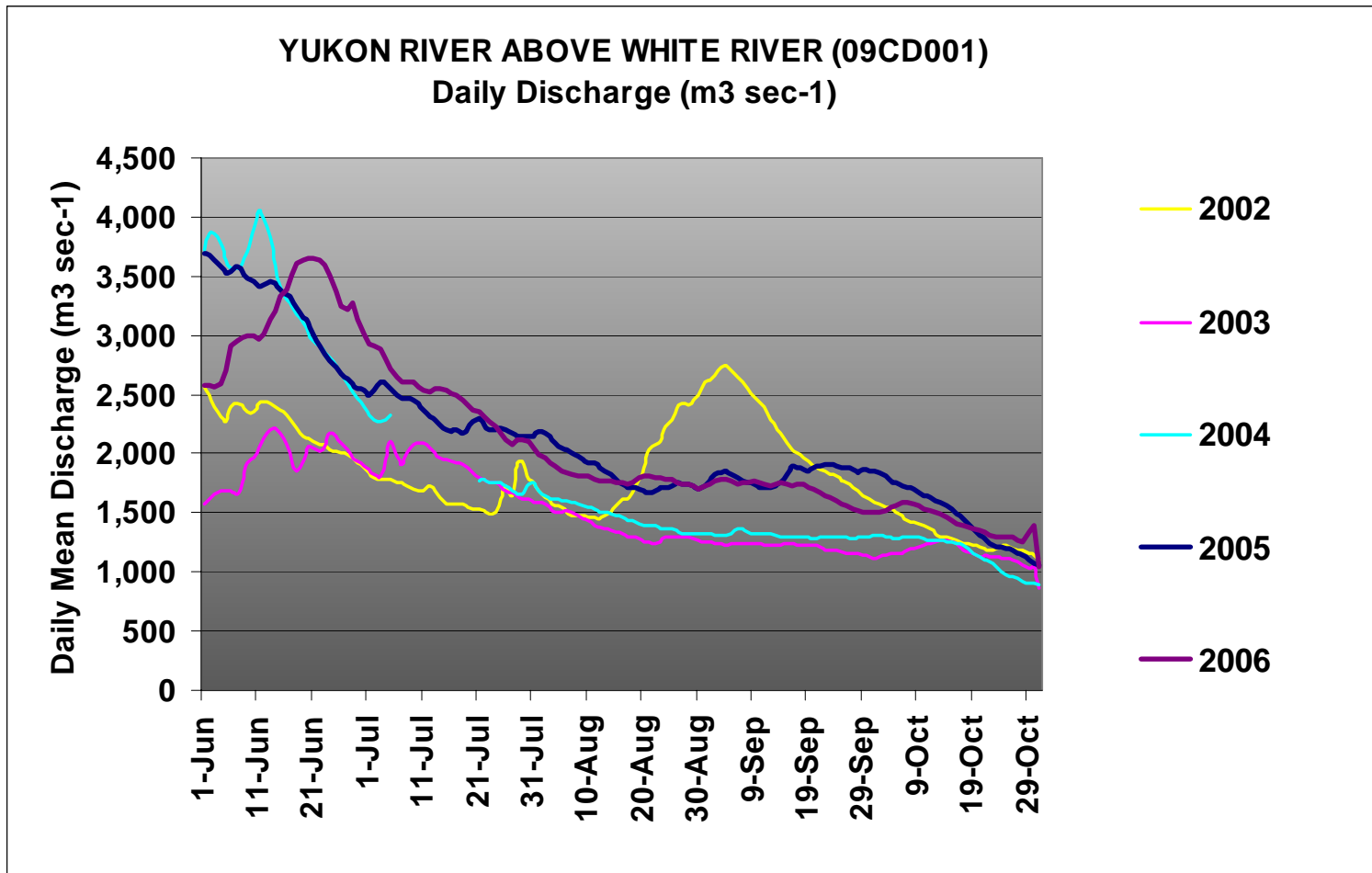


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FIGURE 1: YUKON RIVER (MINTO INDEX AREA) CHUM SALMON TAG RECOVERY INSPECTION SITES



SCALE 1 : 250,000



Source: Water Survey of Canada

Figure 2 Comparison of water discharge for Yukon River at a station (09CD001) above the confluence with the White River just downstream of the Minto Index area, 2002 -2006.

APPENDIX I

SURVEY WAYPOINTS 2006

APPENDIX I

SURVEY WAYPOINTS 2006

Waypoints	Updated Map Reference*	Description
W45	N 62° 48' 40.5" W 137° 29' 47.1"	Slough downstream of Victoria Rock
W50-1	N 62° 42' 08.6" W 137° 13' 55.4"	Rock Face Slough – near upstream inlet – Chum Spawning Area
W52	N 62° 44' 48.8" W 137° 17' 35.3"	Warm-springs above confluence of Pelly River on right bank of Yukon River - Chum Spawning Area
W53	N 62° 46' 25.0" W 137° 22' 27.5"	Slough in front of Fort Selkirk – Chum Spawning Area
W54	N 62° 40' 48.7" W 137° 8' 24.4"	Ingersoll Islands – amongst islands
W55	N 62° 40' 53.6" W 137° 07' 58.9"	Ingersoll Islands right side channel
W58	N 62° 36' 50.8" W 136° 58' 32.5"	Big Creek Slough – primary spawning area
W58-1	N 62° 36' 38.6" W 136° 56' 51.0"	Big Creek Slough - upstream inlet
W67	N 62° 38' 45.0" W 137° 2' 2.2"	Downstream of Big Creek right bank of Yukon River at downstream outlet – Chum Spawning Area

*Position Format: hddd° mm' ss.s" (NAD 27 Alaska)

APPENDIX II

**2006 CHUM SALMON TAG
RECOVERY DATA**

APPENDIX II 2006 CHUM SALMON TAG RECOVERY DATA

Sample	Site	Date	Tag Color	Tag Origin	Tag Number	Location
1	W45	17-Oct-06	Orange	Canada	Z002374	found on shore
2	W45	17-Oct-06	Orange	Canada	Z003868	found on shore
3	W50-1	15-Oct-06	Orange	Canada	C02639	found on shore
4	W50-1	15-Oct-06	Orange	Canada	T007209	found in slough
5	W50-1	15-Oct-06	Orange	Canada	Z002249	found on shore
6	W50-1	15-Oct-06	Orange	Canada	Z003277	found on shore
7	W50-1	15-Oct-06	Orange	Canada	Z003433	found on shore
8	W50-1	15-Oct-06	Orange	Canada	Z006233	found in slough
9	W50-1	15-Oct-06	Pink	US	64626	found on shore
10	W52	16-Oct-06	Orange	Canada	A04682	found in slough
11	W52	16-Oct-06	Orange	Canada	no number	found in slough
12	W52	16-Oct-06	Orange	Canada	Z002845	found in slough
13	W52	16-Oct-06	Orange	Canada	Z003071	found on shore
14	W52	16-Oct-06	Orange	Canada	Z003724	found in slough
15	W52	16-Oct-06	Orange	Canada	Z004816	found in slough
16	W52	16-Oct-06	Orange	Canada	Z005164	found in slough
17	W52	16-Oct-06	Orange	Canada	Z005558	found in slough
18	W52	16-Oct-06	Orange	Canada	Z005790	found on shore
19	W52	16-Oct-06	Orange	Canada	Z005866	found in slough
20	W52	16-Oct-06	Orange	Canada	Z006641	found in slough

Sample	Site	Date	Tag Color	Tag Origin	Tag Number	Location
21	W52	16-Oct-06	Pink	US	69439	found in slough
22	W53	17-Oct-06	Orange	Canada	Z003745	found on shore
23	W53	17-Oct-06	Orange	Canada	Z004121	found in slough
24	W53	17-Oct-06	Orange	Canada	Z005336	found on shore
25	W53	17-Oct-06	Orange	Canada	Z005345	found on shore
26	W54	14-Oct-06	Orange	Canada	A03890	found on shore
27	W55	14-Oct-06	Orange	Canada	no number	found on shore
28	W55	14-Oct-06	Orange	Canada	Z003746	found in slough
29	W55	14-Oct-06	Orange	Canada	Z003817	found on shore
30	W55	14-Oct-06	Pink	US	65596	found in slough
31	W58	13-Oct-06	Orange	Canada	C004109	found on shore
32	W58	13-Oct-06	Orange	Canada	M02409	found in slough
33	W58	13-Oct-06	Orange	Canada	Z002460	found in slough
34	W58	13-Oct-06	Orange	Canada	Z003203	found in slough
35	W58	13-Oct-06	Orange	Canada	Z003827	found in slough
36	W58	13-Oct-06	Orange	Canada	Z004253	found on carcass on shore
37	W58	13-Oct-06	Orange	Canada	Z004419	found on shore
38	W58	13-Oct-06	Yellow	US	2239	found in slough
39	W58	13-Oct-06	White	US	69174	found on shore
40	W58-1	13-Oct-06	Orange	Canada	A02100	found in slough
41	W67	14-Oct-06	Orange	Canada	S08428	found on shore

APPENDIX III

**2006 CHUM SALMON
BIOLOGICAL DATA**

APPENDIX III 2006 CHUM SALMON BIOLOGICAL DATA

Sample	Site	Date	Sex	Tag Number or Fin Markings	Condition*	POHL (mm)	MEF (mm)
1	W58-1	13-Oct-06	M	no tag or markings	SC	555	625
2	W58-1	13-Oct-06	F	no tag or markings	SC	500	575
3	W58-1	13-Oct-06	M	no tag or markings	SC	525	575
4	W58	13-Oct-06	M	no tag or markings	SC	535	595
5	W58	13-Oct-06	M	no tag or markings	SC	470	525
6	W58	13-Oct-06	M	no tag or markings	SC	525	620
7	W58	13-Oct-06	M	no tag or markings	SC	465	520
8	W58	13-Oct-06	M	no tag or markings	SC	485	560
9	W58	13-Oct-06	F	no tag or markings	SC	510	565
10	W58	13-Oct-06	M	no tag or markings	SC	475	535
11	W58	13-Oct-06	M	no tag or markings	SC	445	510
12	W58	13-Oct-06	F	no tag or markings	SC	480	555
13	W58	13-Oct-06	M	no tag or markings	SC	530	585
14	W58	13-Oct-06	F	no tag or markings	SC	525	585
15	W58	13-Oct-06	F	no tag or markings	SC	555	610
16	W58	13-Oct-06	F	no tag or markings	SC	505	560
17	W58	13-Oct-06	M	no tag or markings	SC	510	565
18	W58	13-Oct-06	M	no tag or markings	SC	530	600
19	W58	13-Oct-06	F	no tag or markings	SC	490	545
20	W58	13-Oct-06	M	no tag or markings	SC	485	555
21	W58	13-Oct-06	F	no tag or markings	SC	540	590
22	W58	13-Oct-06	F	no tag or markings	SC	500	530
23	W58	13-Oct-06	M	no tag or markings	SC	520	600
24	W67	14-Oct-06	F	no tag or markings	SC	555	540
25	W67	14-Oct-06	F	no tag or markings	SC	560	540
26	W67	14-Oct-06	M	no tag or markings	SC	495	555
27	W67	14-Oct-06	M	no tag or markings	SC	560	535
28	W67	14-Oct-06	M	no tag or markings	SC	555	555
29	W67	14-Oct-06	M	no tag or markings	SC	495	545
30	W67	14-Oct-06	F	no tag or markings	SC	460	575

Sample	Site	Date	Sex	Tag Number or Fin Markings	Condition*	POHL (mm)	MEF (mm)
31	W67	14-Oct-06	F	no tag or markings	SC	530	595
32	W67	14-Oct-06	M	no tag or markings	SC	540	555
33	W67	14-Oct-06	M	no tag or markings	SC	555	560
34	W50-1	15-Oct-06	F	no tag or markings	SC	525	585
35	W50-1	15-Oct-06	M	no tag or markings	SC	550	605
36	W50-1	15-Oct-06	F	no tag or markings	SC	485	540
37	W50-1	15-Oct-06	M	no tag or markings	SC	515	580
38	W50-1	15-Oct-06	F	no tag or markings	SC	495	550
39	W50-1	15-Oct-06	M	no tag or markings	SC	570	650
40	W50-1	15-Oct-06	M	no tag or markings	SC	500	560
41	W50-1	15-Oct-06	F	no tag or markings	SC	495	545
42	W50-1	15-Oct-06	F	no tag or markings	SC	505	560
43	W50-1	15-Oct-06	F	no tag or markings	SC	500	555
44	W50-1	15-Oct-06	F	no tag or markings	SC	510	585
45	W50-1	15-Oct-06	F	no tag or markings	SC	530	580
46	W50-1	15-Oct-06	F	no tag or markings	SC	515	570
47	W50-1	15-Oct-06	F	no tag or markings	SC	510	565
48	W50-1	15-Oct-06	F	no tag or markings	SC	500	555
49	W50-1	15-Oct-06	M	no tag or markings	SC	575	635
50	W50-1	15-Oct-06	M	no tag or markings	SC	530	605
51	W50-1	15-Oct-06	F	no tag or markings	SC	520	590
52	W50-1	15-Oct-06	F	no tag or markings	SC	515	580
53	W50-1	15-Oct-06	F	no tag or markings	SC	450	500
54	W50-1	15-Oct-06	F	no tag or markings	SC	480	535
55	W50-1	15-Oct-06	M	no tag or markings	SC	565	635
56	W50-1	15-Oct-06	M	no tag or markings	SC	505	570
57	W52	16-Oct-06	F	no tag or markings	SC	540	575
58	W52	16-Oct-06	F	no tag or markings	SC	510	555
59	W52	16-Oct-06	F	no tag or markings	SC	510	570
60	W52	16-Oct-06	M	no tag or markings	SC	560	610
61	W52	16-Oct-06	F	no tag or markings	SC	540	595

Sample	Site	Date	Sex	Tag Number or Fin Markings	Condition*	POHL (mm)	MEF (mm)
62	W52	16-Oct-06	F	no tag or markings	SC	545	590
63	W52	16-Oct-06	F	no tag or markings	SC	555	615
64	W52	16-Oct-06	M	no tag or markings	SC	550	625
65	W52	16-Oct-06	M	no tag or markings	SC	525	585
66	W52	16-Oct-06	F	no tag or markings	SC	545	590
67	W52	16-Oct-06	M	no tag or markings	SC	590	660
68	W52	16-Oct-06	M	no tag or markings	SC	530	590
69	W52	16-Oct-06	F	no tag or markings	SC	490	545
70	W52	16-Oct-06	F	no tag or markings	SC	505	555
71	W52	16-Oct-06	F	no tag or markings	SC	495	555
72	W52	16-Oct-06	M	no tag or markings	SC	530	600
73	W52	16-Oct-06	F	no tag or markings	SC	495	535
74	W52	16-Oct-06	M	no tag or markings	SC	565	620
75	W52	16-Oct-06	M	no tag or markings	SC	515	590
76	W52	16-Oct-06	F	no tag or markings	SC	500	555
77	W52	16-Oct-06	F	no tag or markings	SC	555	605
78	W52	16-Oct-06	F	no tag or markings	SC	555	620
79	W52	16-Oct-06	F	no tag or markings	SC	560	610
80	W52	16-Oct-06	F	no tag or markings	SC	530	585
81	W52	16-Oct-06	M	no tag or markings	SC	560	630
82	W53	17-Oct-06	M	no tag or markings	SC	520	595
83	W53	17-Oct-06	M	no tag or markings	SC	540	615
84	W53	17-Oct-06	F	no tag or markings	SC	480	545
85	W53	17-Oct-06	F	no tag or markings	SC	510	565
86	W53	17-Oct-06	F	no tag or markings	SC	530	580
87	W53	17-Oct-06	F	no tag or markings	SC	485	560

R = ripe live fish
S = spent live fish
SC = spent carcass

Site	Date	Carcasses on Shore	Chum Captured or Enumerated in Slough*	Recovered 2006 Canadian Unattached Tags	Observed 2006 Canadian Attached Tags**	Recovered Pre-2006 Canadian Unattached Tags	Recovered American Unattached Tags	Observed American Attached Tags***	Total Tags Observed or Recovered (CAN and US)
W45	17-Oct-06	35	28	2	1	0	0	0	3
W50-1	15-Oct-06	79	129	4	0	2	1	0	7
W52	16-Oct-06	181	276	9	5	2	1	0	17
W53	17-Oct-06	23	27	4	1	0	0	0	5
W54	14-Oct-06	17	62	0	0	1	0	0	1
W55	14-Oct-06	75	65	2	1	1	1	0	5
W58	13-Oct-06	229	59	5	1	2	2	0	10
W58-1	13-Oct-06	4	51	0	0	1	0	0	1
W67	14-Oct-06	27	38	0	0	1	0	0	1
Total		670	735	26	9	10	5	0	50

* includes carcasses in slough

** orange spaghetti tags on live fish

*** green, pink or white spaghetti tags on live fish