Chum Salmon Escapement Enumeration, South Alouette River, 1999

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Summary

The 1999 chum salmon enumeration project is a continuation of the 1998 study completed by Scott Resource Services Inc. and BCIT Fish, Wildlife and Recreation (FWR) students. From October 1 to December 1 1999, Scott Resource Services Inc. along with Katzie First Nation, and BCIT FWR students, Len Moreside, George Nohr and Deanna Hamilton, conducted a Curlock mark and recapture survey on the South Alouette River. The data collection was completed on December 1 and in the following months data verification and analyses were completed.

Returning adult chum salmon were captured at five set sites using a beach seine. The salmon were tagged with a Curlock clamp tag, attached to the right operculum. A secondary mark, a left operculum hole punch was also applied to evaluate tag loss. Carcass recovery was then performed on all reaches of the system to collect data for enumeration. The enumeration models used were Modified Petersen and Schaefer methodology.

During the study, 1528 chum salmon were tagged between October 1 and November 7, 1999. During 11 weeks of dead pitching 23 251 carcasses were examined and of the 1528 tags applied, 721 or 47% were recovered.

Recommendations for improvements to data collection in future study. The primary is that all tagging sites be located below spawning grounds; to provide equal distribution of tagging throughout the South Alouette system. Potential sources of bias are discussed in the report.

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Acknowledgement/Contacts

We would like to thank the following people who helped our project with data collection and background information.

Gary Rosberg, Instructor Fisheries Management BCIT

Andrew Walter, Scott Resource Services Inc.

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Trevor Pierre, Katzie First Nation

Ross Davies, A.R.M.S.

1.0 Introduction

The South Alouette Chum Salmon Enumeration Study was initiated October 1 1998 to enumerate the escapement in the South Alouette River in Maple Ridge. The client for the project was BC Hydro and the contractor Scott Resource Services Inc. The project team included Deanna Hamilton, Len Moreside and George Nohr of BCIT Fish, Wildlife and Recreation Program. The project was under the supervision of Andrew Walter and Steve MacDonald, both from Scott Resource Services Inc. Data collection was done at five locations below the dam. Data collection began October 1 and ended December 1. At the completion of the carcass recovery, data processing and enumeration commenced.

The objectives of the project were to:

1. Conduct a mark and recapture survey on the South Alouette to enumerate returning 1999 adult chum.

2. Analyze tagging and recovery data using a modified Petersen and Schaefer analyses.

3. Present the results and escapement calculations in a formal report.

1.1. Background

The background section was adapted from the 1998 Chum Salmon Enumeration on the South Alouette River (Logan, et al, 1999). Before it was dammed, the South Alouette River was once a wild unimpeded river. The river flows from the southwest end of Alouette Lake westward, through the present day communities of Maple Ridge and Pitt Meadows, to its junction with the North Alouette River. The combined arms of the Alouette then flow into the Pitt River, which flows into the Fraser River (Figure 1.).

Despite damming and dyking for irrigation, logging, and gravel mining the Alouette continues to support several salmonid species present in the Alouette include:

- chinook salmon (*Oncorhynchus tshawytscha*)
- chum salmon (*O. keta*)
- coho salmon (*O. kisutch*)
- pink salmon (*O. gorbuscha*)
- rainbow trout (*O. mykiss*)
- coastal cutthroat trout (*O. clarki clarki*)

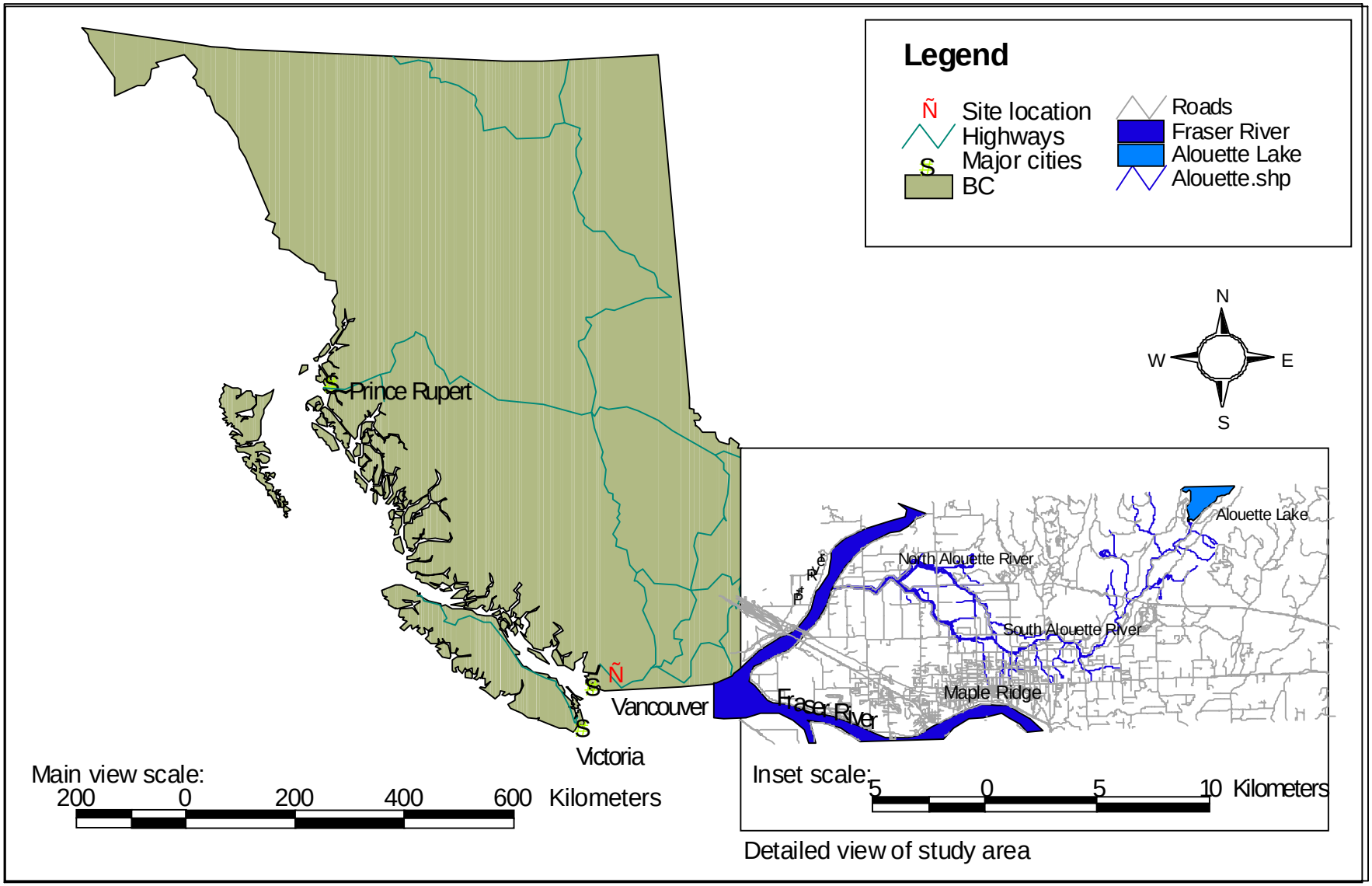

Figure 1. Study Area

Economic development and urban expansion created the need for new sources of power for the growing Lower Mainland population. Given the growing needs of a growing population, Burrard Power Company (now BC Hydro) was granted the right to dam the river and divert the Alouette water to the Stave Falls generating station via an underground pipeline. Construction of the dam at the south end of Alouette Lake began in 1925, and by 1926 the river was blocked and diverted.

Installation of the dam severely impacted the salmonid populations in the river. Populations of sockeye and chinook which spawned upstream of the lake were extirpated because they were unable to reach their traditional spawning grounds. Low flows, combined with gravel mining and urban encroachment have heavily impacted populations below the lake. The irregular spilling of water from the dam scoured the river destroying critical spawning and rearing habitats.

In the early 1970's, changing views about the environment began to change the way the Alouette system was managed. In 1972, BC Hydro entered into a minimum flow agreement with the Alouette River Management Society (ARMS), which would provide a constant minimum flow of two cubic feet per second (cfs) below the dam. In 1979, the construction of a fish hatchery at the Alouette Regional Correctional Centre helped ease the pressure on dwindling salmonid stocks. Several habitat improvement projects and other studies were undertaken throughout the 1970's and 80's that resulted in a temporary flow increase of 20 cfs.

In the early 1990's things began to change on the river. ARMS, a group of concerned local residents, formed to deal with river issues leading and worked to develop a comprehensive water use plan with BC Hydro. In 1994, BC Hydro broadened its approach to fish and habitat management by launching the Strategic Fisheries Project. The objective of this project is to find a balance between fish protection, power supply operations, and energy demand. The first phase of the project was to evaluate the effects that hydroelectric installations have had on fish and fish habitat. Thirteen of BC Hydro's 58 facilities were considered a high priority and the Alouette diversion dam was ranked amongst the top thirteen.

In 1996, all interested parties began a series of meetings with the goal of developing a comprehensive water use plan that would meet the needs of all stakeholders and interest groups. These meetings brought together representatives from BC Hydro, Department of Fisheries and Oceans, Ministry of Environment, Ministry of Energy Mines and Petroleum, ARMS, the Katzie First Nation, District of Maple Ridge, Fraser Basin Management Committee, Alouette River Field Naturalists, and local riparian landowners and residents. The result was a comprehensive water use plan that would increase instream flows to between 70 and 105 cfs. Also, a commitment was made by BC Hydro to continue monitoring and funding for habitat improvement. Another important aspect of the agreement was to assess whether these increased flows would benefit local fish stocks and habitat. This chum salmon enumeration is part of BC Hydro's continuing commitment to the South Alouette River, its' fish, and the community.

2.0 Study Area

The study area description was extracted from Logan et al., 1999. The South Alouette River runs approximately 22km from the BC Hydro Dam at the southern end of Alouette Lake through the municipalities of Pitt Meadows and Maple Ridge until it joins the North Alouette and discharges into the Pitt River (Figure2.).

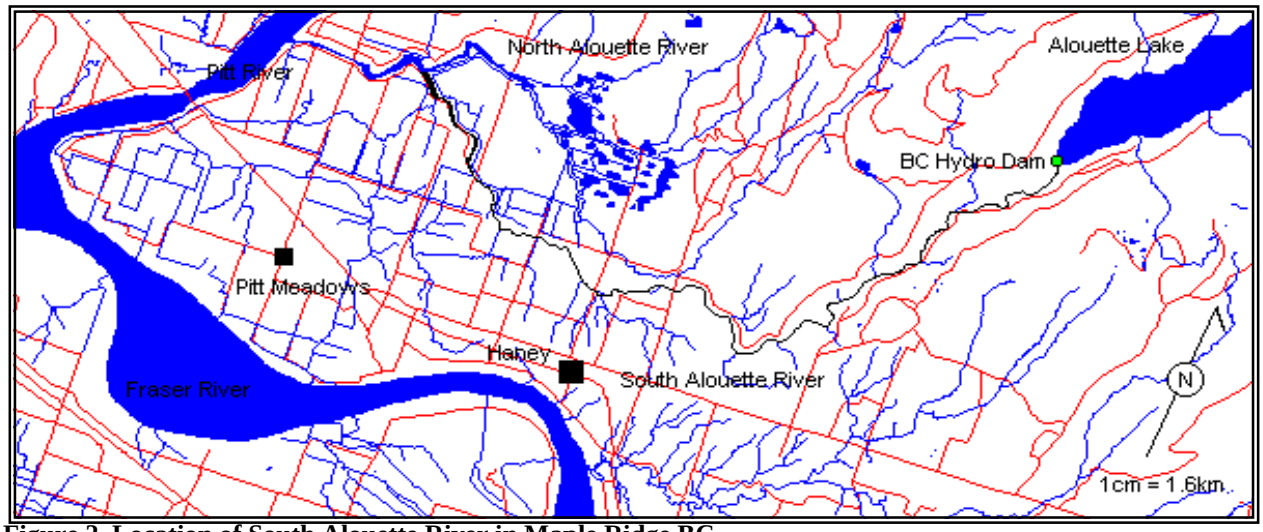

Figure 2. Location of South Alouette River in Maple Ridge BC.
Taken from: Logan et al., 1999
Adapted from: BC Fish Habitat Inventory and Watershed Atlas 1999 (Department of Fisheries and Oceans, 1999).

2.1. Fish Use

The South Alouette River supports populations of various salmonid species. The species encountered during the study included:

- Chum salmon
- Coho salmon
- Chinook salmon
- Rainbow trout
- Cutthroat trout
- Mountain whitefish (*Prosopium williamsoni*)

From 1984 to 1993, DFO conducted aerial counts and from 1997 to 1999 ARMS conducted swim counts on salmon populations on the South Alouette River. The enumeration counts are summed up on the following page in Table I.

Table I. DFO and A.R.M.S. Enumeration Counts

1.1.1.1 Department of Fisheries and Oceans Aerial Counts				
Time Period	Period Mean	Period Max	Historical Max	Year of Max
1984-93	18 989	40 000	40 000	1985
1.1.1.2 Alouette River Management Society Swim Counts				
Year	Estimate			
1997	60 000			
1998	123 000			
1999	45 000			

Chinook salmon populations, once extirpated from the river, began to show signs of recovery during the 1998 study. The early indications show there were more chinook salmon that returned to the South Alouette system during 1999.

Sculpins (*Cottus sp.*) were the only non-salmonid species encountered.

2.2. Beach Seine Capture Sites

The beach seine sites were the same as the 1998 Chum Salmon Enumeration on the South Alouette River (Logan et al., 1999). During the study there were 5 sites selected to capture chum salmon for tagging. The sites were selected based on their accessibility, use by fish, and the existence of suitable pool and beach areas for seining (Figure 3.). Figure 4, on the following page, shows the location of the beach seine sites.

Figure 3. Beach seining

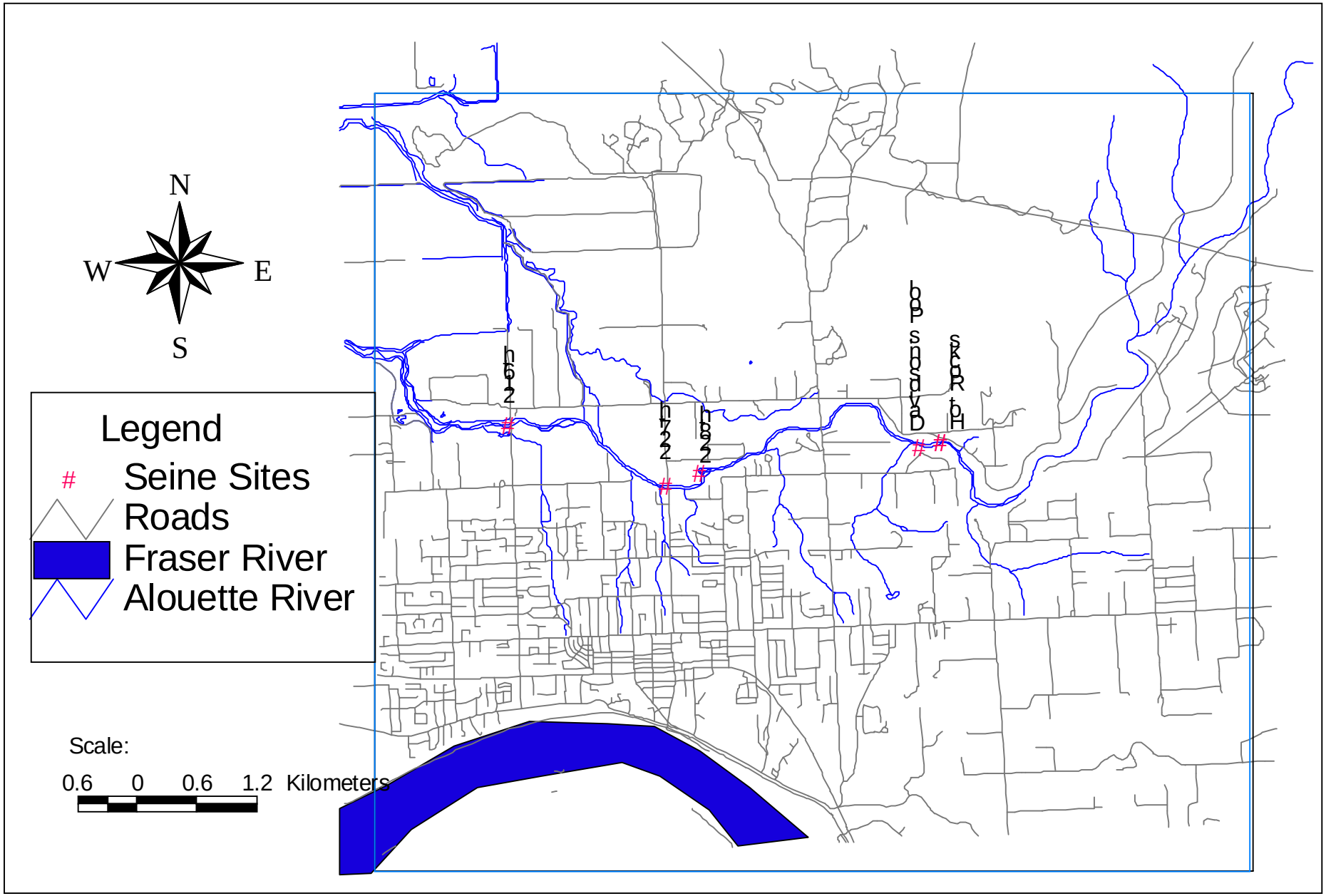

Figure 4. Location of beach seine sites on South Alouette River, 1999.

2.3 Carcass Recovery Reaches

The carcass recovery reaches were also the same as those delineated in Logan et al., 1999. For the purposes of complete carcass and tag recovery, it was necessary to divide the river into a number of suitable reaches. The reaches are selected based on accessibility, length and to allow complete coverage of the system by recovery teams. A total of eight reaches were established and they are illustrated in Figure 5.

1 - BC Hydro Dam to Alouette Regional Correctional Centre (ARCC)
2 - ARCC to Allco Park
3 - Allco Park to Davidson's Pool
4 - Davidson's Pool to 232nd Street
5 - 232nd Street to 228th Street
6 - 228th Street to 224th Street
7 - 224th Street to 216th Street
8 - Below 216th Street

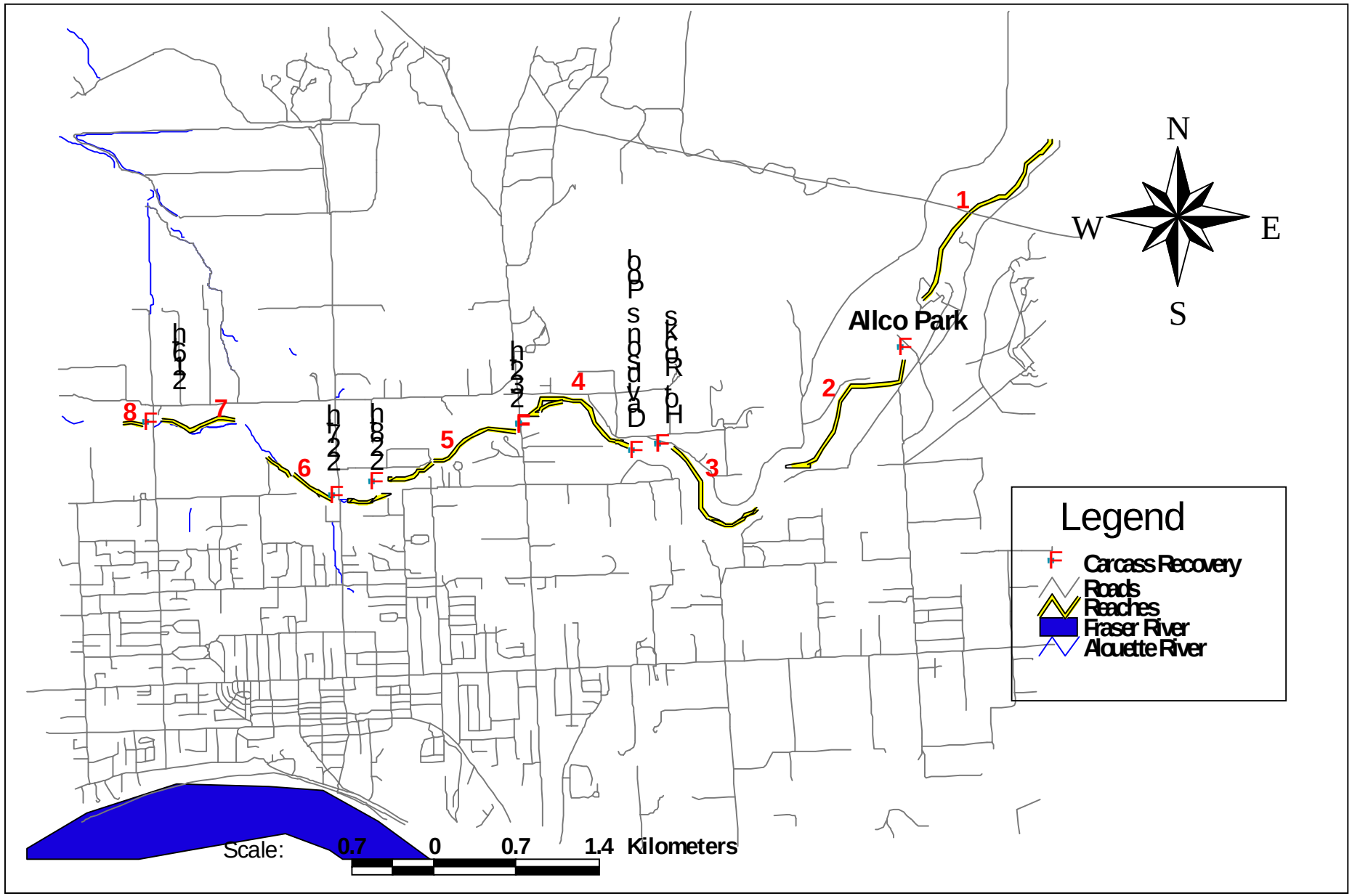

Figure 5. Location of carcass recovery reaches on South Alouette River, 1999.

3.0 Materials and Methods

3.1. Materials

Below is a list of the equipment used during the project field work.

- pencils
- armoured thermometer
- machetes (6)
- pew sticks (6)
- wet suit
- hole punch
- notebooks with waterproof paper
- 15m x 3m, 5cm stretch mesh beach seine net
- tally counters (6)
- meter stick
- ziploc bags
- net mending kit
- waders and boots
- wheelbarrow
- nylon rope
- Federal Fisheries Collection Permits
- rain gear
- sharpening file
- cruisers' vests
- garbage can
- first aid kit
- needlenose pliers
- camera and film
- Curlock™ clamp tags and applicator

3.2. Beach Seine Capture and Tagging Methods

A seine net was used to capture salmon. Most of the effort took place where "holding" areas were available so fish could be driven up or down stream into the net. The net was pulled quickly through the pool to surround them and captures the fish.

Two of the team members would wade in and remove all previously tagged fish and fish that had spawned. The "green" or fresh fish were taken to the measuring trough where they were sexed and measured nose to fork length. Curlock tags were applied to the right operculum and left operculum hole punched to provide a secondary mark. They were released (Figure 6.) and given a number to indicate their release condition (see below).

1. No revival needed
2. Some revival needed
3. Extensive revival needed

This condition number was collected to assess possible mortality due to tagging.

Figure 6. Applying a Curlock Tag

3.3. Carcass Recovery

Carcass recovery on the South Alouette River was conducted as often as water conditions allowed. On November 16, 1999, BC Hydro dam released water due to heavy rains and urban runoff, making the level of water in the river substantially higher and dangerous. No carcass recovery could be done on this day.

Carcass recovery was done in teams of two or three. Each team would walk up or down a particular reach of the river examining all salmonid carcasses for tags and secondary marks.

All carcasses found were recorded and identified to sex and then cut in half to prevent recount. Female carcasses found with a tag or secondary mark were used to gain an estimate of percent spawned. The estimates were done by visual estimation of how many eggs remained in the fish. This spawning data were recorded as 100% (no to very few eggs), 50%(1/2 eggs remained) or 0% (all to most eggs) spawned. The tag number and recovery location were also then recorded.

3.4. Data Analyses

On the morning of 12 Jan 2000 data collected during the study were verified. The verified data were then analyzed using the modified Petersen method with a 95% confidence limit. A Schaefer analysis was then completed to check the Petersen estimate.

3.4.1. Modified Petersen and Schaefer Methods

Data from the mark recapture were analyzed using the modified Petersen method. This is a multiple census, which consists of tagging a number of fish over a period of time during which the system is examined for recaptures, or in this case fish recovered with tags (Ricker 1975). Estimates for both sexes and pooled sexes were completed. The formula used to calculate the population estimate was:.

$$N = \frac{(M+1)(C+1)}{(R+1)} \text{ (Ricker 1975)}$$

Where: N = the estimate of total number of fish in the population
M = the number of tagged fish in the population
C = the total number of carcasses examined for tags
R = the number of tags recovered from the population

The 95% confidence interval for the estimate was calculated using the following formula:

$R + 1.92 \pm 1.96\sqrt{R+1}$ (Ricker 1975)

Where: R = tags recovered

The new values for R were then inserted back into the original equation to obtain the upper and lower limits for the estimate.

3.4.2 Schaefer Analysis

The Schaefer analysis was used to check the validity of the Petersen estimate. This method stratifies populations by time of capture and recovery. This is useful in populations of migratory fish (Ricker 1975). Basically, it involves doing Schaefer estimates for each week of tagging and recovery then summing them up to check against the Petersen estimate for the total population. The formula used was as follows:

$$N = \sum N_{ij} = \sum \left(R_{ij} * \frac{M_i}{R_i} * \frac{C_j}{R_j} \right) \text{(Ricker 1975)}$$

where: N = the estimate of total number of fish in the population
M_i = the number of fish marked (tagged) in the ith period
C_j = the number of fish examined in the jth period
R_{ij} = the number of fish marked in the ith period which were recovered in the jth period
R_i = the total recaptures of fish tagged in the ith period
R_j = the total fish recaptured during the jth period

Carcasses exhibiting a secondary mark and no tag were excluded from the Schaefer estimation, as the period in which they were tagged cannot be verified.

4.0 Results

4.1. Tagging and Recovery Results

During the study, 1528 chum salmon were tagged with a Curlock clamp tag between October 1 and November 7, 1999. Table II. summarizes tags applied at each location and the number of seine sets used.

Table II. Total Tags Applied at Each Seine Site

Location of seine sites	**216th**	**227th**	**228th**	**Davidsons Pool**	**Hot Rocks**
Total tags applied	17	386	1021	39	65
Total Sets per Site	4	29	35	11	12

During certain tagging weeks chum salmon were more easily caught due to manageable water levels and fish availability. During weeks 2-7 over 99% of the chum were tagged. Table III summarizes this data.

Table III. Summary of Fish Tagged / Week

Weeks	**Males**	**Female**	**Total**
1	5	1	6
2	221	108	329
3	298	120	418
4	202	103	305
5	113	87	200
6	155	108	263
7	0	0	0
8	5	2	7
Totals	**999**	**529**	**1528**

During the 11 weeks of dead pitching, 23 251 carcasses were examined. Of the 1528 tags applied, 721 tags or 47% were recovered.

Water discharge remained constant throughout the study period, excluding November 16th 1999. Figure 9, on the following page, shows the mean daily catch of chum / set in relation to water discharge and weekly number of chum tagged

Table IV summarizes fish examined for marks and the number of tags recovered on a weekly basis.

Table IV. Summary of Chum Recovered / Week

Week	Untagged		Total Untagged	Hatchery females	Tagged		Total Tags Recovered	Total Carcasses Examined
	M	F			M	F		
1	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0
3	508	185	701	8	48	26	74	782
4	1212	752	2091	127	141	65	206	2297
5	1772	1060	2839	7	112	41	153	2992
6	3894	2854	6780	32	104	70	174	6954
7	1126	664	1890	100	7	7	14	1904
8	2965	2713	5685	7	45	38	83	5768
9	757	669	1426	0	6	4	10	1436
10	384	430	814	0	2	4	6	820
11	41	59	100	0	1	0	1	101
Totals	**12659**	**9386**	**22326**	**281**	**466**	**255**	**721**	**23054**

4.1.1. Incidental Species Capture and Recovery Results

Adult pink salmon were tagged during the first two weeks of the study. Due to funding constraints, tagging of pinks was discontinued and pinks were excluded from the study. Therefore, pink escapement data is not included.

Chinook salmon were tagged throughout the study. Scale samples were taken from Chinook. Data for the chinook escapement is pending.

4.1.2. Population Estimate Results

The tagging and recovery data collected during the study were used to calculate a population estimate using the Petersen formula previously discussed. Table V summarizes the results.

Table V. Results of Modified Petersen Estimate, 1999

Sex	Tagged Fish	Number of Recoveries	Percent Recovered	Carcasses Examined	Peterson Estimate	95% Confidence Limits
Males	999	466	47%	13125	28107	25671 to 30769
Females	529	255	48%	9922	20544	18180 to 23213
Totals	1528	721	47%	23047	48641	45379 to 52499

To check the accuracy of the modified Petersen estimate a Schaefer analysis was done. Table VI below shows how the estimate was derived.

Table VI. Recoveries of Chum Salmon Tagged in Successive Weeks by Week of Recovery on the South Alouette River, 1999

Weeks of Tagging											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**Rj**	**Cj**	**Cj/Rj**
Week of Recovery											
1	0	0	0	0	0	0	0	0	0	**0**	**1.0**
2	0	0	0	0	0	0	0	0	0	**0**	**1.0**
3	4	67	2	0	0	0	0	0	73	**782**	**10.7**
4	0	0	197	3	0	0	0	0	200	**2408**	**12.0**
5	0	0	0	142	0	0	0	0	142	**2992**	**21.1**
6	0	6	35	85	44	0	0	0	170	**6954**	**40.9**
7	0	0	14	0	0	0	0	0	14	**1990**	**142.1**
8	0	0	5	13	18	44	0	0	80	**5768**	**72.0**
9	0	0	0	0	2	7	0	1	10	**1436**	**143.6**
10	0	0	0	0	2	2	0	2	6	**820**	**136.7**
11	0	0	0	0	0	1	0	0	1	**101**	**101.0**
Ri	**4**	**73**	**253**	**243**	**66**	**54**	**0**	**3**	**696**		
Mi	**6**	**329**	**418**	**305**	**200**	**263**	**0**	**7**	**1501**		
Mi/Ri	**1.5**	**4.5**	**1.6**	**1.2**	**0.3**	**4.9**	**0**	**2.3**			

Notes:

- A total of 27 fish exhibiting only secondary marks had to be excluded from this estimate as time of tagging cannot be varified.
- Ri = the total recaptures of fish tagged in the ith period
- Rj = the total fish recaptured during the jth period
- Cj = the number of fish examined in the jth period
- Mi = the number of fish marked in the ith period

The numbers in the above table were inserted into the Schaefer formula to get estimates for each individual week. The weekly estimates were then summed to arrive at the total population estimate. The calculations for each individual week and a total estimate are shown in Table VII on the following page.

Table VII. Computed Estimates of Chum Salmon in the South Alouette River, 1999

	Week of Tagging								Total
	Week 1	**Week 2**	**Week 3**	**Week 4**	**Week 5**	**Week 6**	**Week 7**	**Week 8**	
Week of Recovery									
Week 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Week 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Week 3	64.20	3226.05	34.24	0.0	0.0	0.0	0.0	0.0	**3324.49**
Week 4	0.0	0.0	3782.40	43.20	0.0	0.0	0.0	0.0	**3825.60**
Week 5	0.0	0.0	0.0	3595.44	0.0	0.0	0.0	0.0	**3595.44**
Week 6	0.0	1104.30	2290.40	4171.80	539.88	0.0	0.0	0.0	**8106.38**
Week 7	0.0	0.0	3183.04	0.0	0.0	0.0	0.0	0.0	**3183.04**
Week 8	0.0	0.0	576.00	1123.20	388.80	15523.20	0.0	0.0	**17611.20**
Week 9	0.0	0.0	0.0	0.0	86.16	4925.48	0.0	330.28	**5341.92**
Week 10	0.0	0.0	0.0	0.0	82.02	1339.66	0.0	628.82	**2050.50**
Week 11	0.0	0.0	0.0	0.0	0.0	494.90	0.0	0.0	**494.40**
Totals	**64.20**	**4330.35**	**9866.08**	**8933.64**	**1096.86**	**22283.24**	**0.0**	**959.1**	**47533.47**
Final Schaefer Estimate									**47533**

Using the modified Petersen calculation, the estimate was 48, 641 chum salmon with a 95% confidence limit between 45,379 and 52,499. The confidence limits are within 10% of the original Petersen estimate. Using the Schaefer analysis, the estimate of chum salmon was 47,533. The final modified Petersen estimate and Schaefer analysis were within 1108 fish (2.2%) indicating high accuracy and a successful mark recapture study.

4.1.3. Potential Sources of Bias

There are some sources of bias associated with the modified Petersen estimation method. Identifying carcasses with secondary marks was challenging due to extreme decomposition. This could affect the number of marked fish recovered. Also, due to funding constraints carcass recovery efforts were concentrated on the mainstem of the South Alouette River and the side channels were not examined. The inability to conduct carcass recovery efforts throughout the run due to high water levels and weather may also contribute error to estimates.

Water levels within the river dramatically increased with heavy rainfall, due to urban runoff and water being released from the dam upstream. Carcass recovery was dangerous during these times and not done for safety reasons.

5.0 Discussion

The 1999 study concentrated only on chum with other species data being excluded due to funding constraints. The 1998 study collected data on chum, chinook, pink and coho. The 98 study has substantially higher escapement numbers, than the study completed in 99. The tables below summarize the tagging and recovery results from both years'.

Table VIII.

Summary of 1998 Data			**Summary of 1999 Data**		
Tagging		**Totals**	**Tagging**		**Totals**
Males	**Females**		**Males**	**Females**	
996	664	1660	999	529	1528
Recovery			**Recovery**		
Untagged males	**Untagged Females**		**Untagged males**	**Untagged Females**	
19278	15813	35091	12863	9667	22530
Tagged males	**Tagged Females**		**Tagged males**	**Tagged Females**	
261	218	479	466	255	721
1.1.1.1 Final Petersen Estimate		**123090**	**Final Petersen Estimate**		**48641**

6.0 Conclusions

The results of the analysis show that approximately 50,000 chum salmon returned to the South Alouette River in the fall of 1999. The 1998 study completed by Logan et al, showed a return of approximately 123 000 chum. Previous estimates by Department of Fisheries and Oceans show an average of 18,989 chum returning with a historical maximum of 40,000. These results could suggest that the DFO aerial counts were too low and to a lesser extent it could show that enhancement efforts have proven effective in providing salmonid spawning habitat.

7.0 Recommendations

The South Alouette River chum salmon tagging and carcass recovery is complete for 1999. There were a few problems encountered and the recommendations for future projects are listed below:

- Locate tagging sites located below spawning grounds would allow for even distribution throughout the system. This may not be feasible due to access but it would improve accuracy of count.
- Continue monitoring of the South Alouette River chum salmon stocks every year to establish an escapement trend in the system.
- Extend the program to include chinook and coho to see if populations are recovering to the same degree as the chum population.
- Construct a fish fence downstream of spawning habitats to prevent walking over redds during seining.

8.0 References

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8.1. Personal Communications

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Appendices

Appendix 1. Record of clamp tags applied to adult chum salmon in the South Alouette River, 1999.

Date	Tag # Sequence	Number Tagged Males	Females	Total	Cumulative Total	Percent Tagged Daily	Cumulative
1-Oct	56101-56106	5	1	6	6	0.39%	0.39%
WEEK 1 TOTAL		**5**	**1**	**6**	**6**	**0.39%**	
4-Oct	56107-56141	24	11	35	41	2.29%	2.68%
6-Oct	56142-56212	48	23	71	112	4.65%	7.33%
7-Oct	56214-56313	74	26	100	212	6.54%	13.87%
Lost tag #	56213						
8-Oct	56315-56438	75	48	123	335	8.05%	21.92%
Lost tag #	56352						
WEEK 2 TOTAL		**221**	**108**	**329**	**335**	**21.53%**	
11-Oct	56439-56564	80	45	125	460	8.18%	30.10%
Lost tag #	56556						
12-Oct	56565-56633	51	18	69	529	4.52%	34.62%
13-Oct	56634-56751	92	26	118	647	7.72%	42.34%
14-Oct	56752-56761	7	3	10	657	0.65%	42.99%
15-Oct	56762-56857	68	28	96	753	6.28%	49.28%
WEEK 3 TOTAL		**298**	**120**	**418**	**753**	**27.35%**	
18-Oct	56876-56959	64	20	84	837	5.50%	54.77%
20-Oct	56960-57074	67	46	113	950	7.40%	62.17%
Lost tag #	56999						
Lost tag #	57000						
22-Oct	57075-57182	71	37	108	1058	7.07%	69.24%
WEEK 4 TOTAL		**202**	**103**	**305**	**1058**	**19.97%**	
25-Oct	57183-57289	52	54	106	1164	6.94%	76.18%
Lost tag #	57288						
28-Oct	57290-57383	61	33	94	1258	6.15%	82.33%
WEEK 5 TOTAL		**113**	**87**	**200**	**1258**	**13.09%**	
1-Nov	57384-57400						
1-Nov	57501-57524	27	14	41	1299	2.68%	85.01%
2-Nov	57525-57665	80	61	141	1440	9.23%	94.24%
3-Nov	57666-57700	23	12	35	1475	2.29%	96.53%
5-Nov	57701-57746	25	21	46	1521	3.01%	99.54%

Date	Tag # Sequence	Number Tagged Males	Females	Total	Cumulative Total	Percent Tagged Daily	Cumulative
WEEK 6 TOTAL		**155**	**108**	**263**	**1521**	**17.21%**	
WEEK 7 TOTAL		**0**	**0**	**0**	**1521**	**17.21%**	
18-Nov	57747-57753	5	2	7	1528	0.46%	100.00%
WEEK 8 TOTAL		**5**	**2**	**7**	**1528**	**0.46%**	
Cumulative total		**999**	**529**		**1528**		**100.00%**

Appendix 2. Record of Tags Recovered from the South Alouette River from October 8 to December7.

Week	Date	Reach	Untagged		Hatchery	Total	Tagged		Total	Total
			Males	Females	Females	Un-tagged	Males	Females	Tagged	Pitched
Week 1 Total			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Cumulative total			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Week 2 Total			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Cumulative total			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
3	08-Oct	3	12	12	0	24	0	0	0	24
3	12-Oct	6	62	8	8	78	1	0	1	86
3	12-Oct	2	65	20	0	85	11	5	16	101
3	12-Oct	1	50	23	0	73	6	0	6	79
3	14-Oct	4	44	23	0	67	2	0	2	69
3	14-Oct	3	47	23	0	70	1	6	7	77
3	14-Oct	2	40	11	0	51	12	7	19	70
3	14-Oct	5	102	31	0	133	1	2	3	136
3	15-Oct	7	0	0	0	0	0	0	0	0
3	15-Oct	5	1	5	0	6	0	0	0	6
3	15-Oct	3	7	2	0	9	2	2	4	13
3	15-Oct	1	78	27	0	105	12	4	16	121
Week 3 Total			**508**	**185**	**8**	**701**	**48**	**26**	**74**	**782**
Cumulative total			**508**	**185**	**8**	**701**	**48**	**26**	**74**	**782**
4	18-Oct	2	129	89	0	218	30	16	46	264
4	18-Oct	3	82	56	0	138	14	6	20	158
4	18-Oct	6	121	55	54	230	5	0	5	235
4	19-Oct	1	197	102	0	299	24	6	30	329
4	19-Oct	4	88	64	0	152	10	4	14	166
4	19-Oct	5	202	100	1	303	12	4	16	319
4	20-Oct	7	44	19	0	63	0	0	0	63
4	20-Oct	3	11	8	0	19	3	2	5	24
4	21-Oct	6	133	94	72	299	4	0	4	303
4	21-Oct	3	96	71	0	167	19	12	31	198
4	22-Oct	2	109	94	0	203	20	15	35	238
Week 4 Total			**1212**	**752**	**127**	**2091**	**141**	**65**	**206**	**2297**
Cumulative total			**1720**	**937**	**135**	**2792**	**189**	**91**	**280**	**3079**

Week	Date	Reach	Untagged		Hatchery	Total	Tagged		Total	Total
			Males	Females	Females	Un-tagged	Males	Females	Tagged	Pitched
5	25-Oct	3	43	26	0	69	0	1	1	70
5	25-Oct	4	232	159	0	391	12	10	22	413
5	25-Oct	2	224	157	0	381	40	10	50	431
5	25-Oct	1	68	37	0	105	10	1	11	116
5	26-Oct	5	606	353	1	960	18	10	28	988
5	26-Oct	1	485	284	0	769	32	6	38	807
5	31-Oct	6	114	44	6	164	0	3	3	167
Week 5 Total			**1772**	**1060**	**7**	**2839**	**112**	**41**	**153**	**2992**
Cumulative total			**3492**	**1997**	**142**	**5631**	**301**	**132**	**433**	**6071**
6	01-Nov	6	178	110	18	306	0	1	1	307
6	01-Nov	3	266	174	0	440	7	6	13	453
6	01-Nov	7	120	30	0	150	0	0	0	150
6	02-Nov	5	84	71	0	155	1	3	4	159
6	03-Nov	1	107	124	0	231	5	5	10	241
6	03-Nov	5	265	138	7	410	1	1	2	412
6	03-Nov	4	322	346	0	668	4	6	10	678
6	03-Nov	2	466	425	0	891	14	22	36	927
6	04-Nov	5	632	368	7	1007	8	2	10	1017
6	04-Nov	1	868	654	0	1522	43	13	56	1578
6	05-Nov	5	307	234	0	541	2	4	6	547
6	05-Nov	1	279	180	0	459	19	7	26	485
Week 6 Total			**3894**	**2854**	**32**	**6780**	**104**	**70**	**174**	**6954**
Cumulative total			**7386**	**4851**	**174**	**12411**	**405**	**202**	**607**	**13025**
7	08-Nov	6	388	231	89	708	3	2	5	713
7	08-Nov	5	17	9	0	26	0	0	0	26
7	08-Nov	7	91	44	0	135	0	0	0	135
7	09-Nov	5	290	191	9	490	2	0	2	492
7	09-Nov	3	15	14	0	29	0	1	1	30
7	09-Nov	7	252	106	0	358	2	1	3	361
7	09-Nov	4	36	36	0	72	0	0	0	72
7	10-Nov	6	19	15	2	36	0	0	0	36
7	10-Nov	2	9	8	0	17	0	2	2	19
7	10-Nov	3	9	10	0	19	0	1	1	20
Week 7 Total			**1126**	**664**	**100**	**1890**	**7**	**7**	**14**	**1904**
Cumulative total			**8512**	**5515**	**274**	**14301**	**412**	**209**	**621**	**14929**

Week	Date	Reach	Untagged		Hatchery	Total	Tagged		Total	Total
			Males	Females	Females	Un-tagged	Males	Females	Tagged	Pitched
8	17-Nov	3	225	169	0	394	6	2	8	402
8	17-Nov	5	160	148	0	308	0	2	2	310
8	17-Nov	4	334	305	1	640	3	2	5	645
8	18-Nov	6	196	155	5	356	3	0	3	359
8	18-Nov	5	75	54	0	129	2	0	2	131
8	18-Nov	2	371	333	0	704	2	7	9	713
8	19-Nov	7	113	158	0	271	0	0	0	271
8	19-Nov	1	628	570	0	1198	12	12	24	1222
8	20-Nov	7	91	72	0	163	0	0	0	163
8	20-Nov	5	179	159	0	338	0	1	1	339
8	20-Nov	1	453	478	0	931	16	12	28	959
8	21-Nov	5	140	112	1	253	1	0	1	254
Week 8 Total			**2965**	**2713**	**7**	**5685**	**45**	**38**	**83**	**5768**
Cumulative total			**11477**	**8228**	**281**	**19986**	**457**	**247**	**704**	**20697**
9	24-Nov	1	29	14	0	43	0	0	0	43
9	24-Nov	2	38	23	0	61	1	0	1	62
9	24-Nov	4	2	0	0	2	0	0	0	2
9	24-Nov	5	129	101	0	230	0	0	0	230
9	24-Nov	7	23	22	0	45	0	0	0	45
9	25-Nov	3	25	31	0	56	0	0	0	56
9	25-Nov	4	30	30	0	60	1	0	1	61
9	25-Nov	5	62	65	0	127	2	1	3	130
9	25-Nov	6	137	115	0	252	0	0	0	252
9	25-Nov	7	60	50	0	110	0	0	0	110
9	25-Nov	5	102	104	0	206	0	0	0	206
9	26-Nov	1	120	114	0	234	2	3	5	239
Week 9 Total			**757**	**669**	**0**	**1426**	**6**	**4**	**10**	**1436**
Cumulative total			**12234**	**8897**	**281**	**21412**	**463**	**251**	**714**	**22133**
10	30-Nov	5	109	101	0	210	0	0	0	210
10	30-Nov	6	63	57	0	120	0	0	0	120
10	30-Nov	3	11	30	0	41	1	1	2	43
10	30-Nov	1	92	109	0	201	1	3	4	205
10	30-Nov	2	35	36	0	71	0	0	0	71
10	01-Dec	7	46	65	0	111	0	0	0	111
10	01-Dec	5	16	26	0	42	0	0	0	42
10	01-Dec	4	12	6	0	18	0	0	0	18
Week 10 Total			**384**	**430**	**0**	**814**	**2**	**4**	**6**	**820**
Cumulative total			**12618**	**9327**	**281**	**22226**	**465**	**255**	**720**	**22953**

Week	Date	Reach	Untagged		Hatchery	Total	Tagged		Total	Total
			Males	Females	Females	Un-tagged	Males	Females	Tagged	Pitched
11	07-Dec	2	2	2	0	4	0	0	0	4
11	07-Dec	1	14	27	0	41	1	0	1	42
11	07-Dec	4	0	0	0	0	0	0	0	0
11	07-Dec	3	5	3	0	8	0	0	0	8
11	07-Dec	6	3	10	0	13	0	0	0	13
11	07-Dec	5	3	6	0	9	0	0	0	9
11	07-Dec	7	14	11	0	25	0	0	0	25
Week 11 Total			**41**	**59**	**0**	**100**	**1**	**0**	**1**	**101**
Cumulative total			**12659**	**9386**	**281**	**22326**	**466**	**255**	**721**	**23054**

Appendix 3. Tag recoveries from chum salmon examined in the South Alouette River, 1999(sorted by week of recovery and area found)

TAG #	SECONDARY MARK	DATE TAGGED	DATE RECOVERED	AREA FOUND	SEX	% SPAWNED
Total week 1	**0**					
cumulative	**0**					
Total week 2	**0**					
cumulative	**0**					
56262	1L	7-Oct	12-Oct	6	M	
56115	1L	4-Oct	12-Oct	2	F	100
56258	1L	7-Oct	12-Oct	2	M	
56161	1L	6-Oct	12-Oct	2	F	100
56124	1L	4-Oct	12-Oct	2	M	
56125	1L	4-Oct	12-Oct	2	M	
56121	1L	4-Oct	12-Oct	2	M	
56177	1L	6-Oct	12-Oct	2	F	100
56113	1L	4-Oct	12-Oct	2	F	100
56151	1L	6-Oct	12-Oct	2	M	
56126	1L	4-Oct	12-Oct	2	M	
56106	1L	1-Oct	12-Oct	2	M	
56119	1L	4-Oct	12-Oct	2	M	
56154	1L	6-Oct	12-Oct	2	M	
56228	1L	7-Oct	12-Oct	2	M	
56159	1L	6-Oct	12-Oct	2	M	
56101	1L	1-Oct	12-Oct	2	M	
56241	1L	7-Oct	12-Oct	1	M	
56284	1L	7-Oct	12-Oct	1	M	
56303	1L	7-Oct	12-Oct	1	M	
56131	1L	4-Oct	12-Oct	1	M	
56132	1L	4-Oct	12-Oct	1	M	
56178	1L	6-Oct	12-Oct	1	M	
56130	1L	4-Oct	14-Oct	4	M	
56123	1L	4-Oct	14-Oct	4	M	
56245	1L	7-Oct	14-Oct	3	M	
56103	1L	1-Oct	14-Oct	3	F	100
56136	1L	4-Oct	14-Oct	3	F	100
56160	1L	6-Oct	14-Oct	3	F	100
56238	1L	7-Oct	14-Oct	3	F	100
56274	1L	7-Oct	14-Oct	3	F	100
56175	1L	6-Oct	14-Oct	3	F	100
56240	1L	7-Oct	14-Oct	2	F	100
56153	1L	6-Oct	14-Oct	2	M	
56353	1L	8-Oct	14-Oct	2	F	100
56359	1L	8-Oct	14-Oct	2	F	100

TAG #	SECONDARY MARK	DATE TAGGED	DATE RECOVERED	AREA FOUND	SEX	% SPAWNED
56368	1L	8-Oct	14-Oct	2	M	
56276	1L	7-Oct	14-Oct	2	M	
56150	1L	6-Oct	14-Oct	2	F	100
56263	1L	7-Oct	14-Oct	2	F	100
56230	1L	7-Oct	14-Oct	2	F	100
56344	1L	8-Oct	14-Oct	2	F	100
56394	1L	8-Oct	14-Oct	2	M	
56336	1L	8-Oct	14-Oct	2	M	
56142	1L	6-Oct	14-Oct	2	M	
56421	1L	8-Oct	14-Oct	2	M	
56101	1L	1-Oct	14-Oct	2	M	
56383	1L	8-Oct	14-Oct	2	M	
56143	1L	6-Oct	14-Oct	2	M	
56193	1L	6-Oct	14-Oct	2	M	
56173	1L	6-Oct	14-Oct	2	M	
56141	1L	4-Oct	14-Oct	5	F	100
56194	1L	6-Oct	14-Oct	5	M	
56197	1L	6-Oct	14-Oct	5	F	100
	1L		15-Oct	3	F	100
56174	1L	6-Oct	15-Oct	3	F	100
56189	1L	6-Oct	15-Oct	3	F	100
56222	1L	7-Oct	15-Oct	3	M	
56215	1L	7-Oct	15-Oct	1	M	
56118	1L	4-Oct	15-Oct	1	M	
56266	1L	7-Oct	15-Oct	1	M	
56180	1L	6-Oct	15-Oct	1	M	
56468	1L	11-Oct	15-Oct	1	F	100
56554	1L	11-Oct	15-Oct	1	F	100
56289	1L	7-Oct	15-Oct	1	M	
56183	1L	6-Oct	15-Oct	1	M	
56163	1L	6-Oct	15-Oct	1	M	
56296	1L	7-Oct	15-Oct	1	M	
56170	1L	6-Oct	15-Oct	1	F	100
56306	1L	7-Oct	15-Oct	1	M	
56158	1L	6-Oct	15-Oct	1	F	100
56117	1L	4-Oct	15-Oct	1	M	
56332	1L	8-Oct	15-Oct	1	M	
56293	1L	7-Oct	15-Oct	1	M	
Total week 3	**74**					
cumulative	**74**					
56421	1L	8-Oct	18-Oct	3	M	
56384	1L	8-Oct	18-Oct	3	M	
56152	1L	6-Oct	18-Oct	3	M	

TAG #	SECONDARY MARK	DATE TAGGED	DATE RECOVERED	AREA FOUND	SEX	% SPAWNED
56409	1L	8-Oct	18-Oct	3	M	
56207	1L	6-Oct	18-Oct	3	M	
56187	1L	6-Oct	18-Oct	3	F	100
56387	1L	8-Oct	18-Oct	3	F	100
56476	1L	11-Oct	18-Oct	3	M	
56167	1L	6-Oct	18-Oct	3	M	
56203	1L	6-Oct	18-Oct	3	M	
56358	1L	8-Oct	18-Oct	3	M	
56156	1L	6-Oct	18-Oct	3	F	100
56146	1L	6-Oct	18-Oct	3	M	
56411	1L	8-Oct	18-Oct	3	F	100
56144	1L	6-Oct	18-Oct	3	F	100
56374	1L	8-Oct	18-Oct	3	F	100
	1L		18-Oct	3	F	100
56176	1L	6-Oct	18-Oct	3	M	
56420	1L	8-Oct	18-Oct	3	F	100
56268	1L	7-Oct	18-Oct	3	M	
56260	1L	7-Oct	18-Oct	6	M	
56243	1L	7-Oct	18-Oct	6	M	
56254	1L	7-Oct	18-Oct	6	M	
56218	1L	7-Oct	18-Oct	6	M	
56190	1L	6-Oct	18-Oct	6	M	
56172	1L	6-Oct	18-Oct	2	M	
56392	1L	8-Oct	18-Oct	2	M	
56166	1L	6-Oct	18-Oct	2	F	100
56434	1L	8-Oct	18-Oct	2	F	100
56770	1L	15-Oct	18-Oct	2	F	100
	1L		18-Oct	2	M	
56196	1L	6-Oct	18-Oct	2	M	
56404	1L	8-Oct	18-Oct	2	M	
56590	1L	12-Oct	18-Oct	2	M	
56333	1L	8-Oct	18-Oct	2	F	100
56827	1L	15-Oct	18-Oct	2	F	100
56328	1L	8-Oct	18-Oct	2	M	
56145	1L	6-Oct	18-Oct	2	F	100
56323	1L	8-Oct	18-Oct	2	F	100
56223	1L	7-Oct	18-Oct	2	M	
56405	1L	8-Oct	18-Oct	2	M	
56601	1L	12-Oct	18-Oct	2	M	
56356	1L	8-Oct	18-Oct	2	M	
56542	1L	11-Oct	18-Oct	2	M	
56433	1L	8-Oct	18-Oct	2	M	
56349	1L	8-Oct	18-Oct	2	M	
56232	1L	7-Oct	18-Oct	2	M	
56426	1L	8-Oct	18-Oct	2	M	

TAG #	SECONDARY MARK	DATE TAGGED	DATE RECOVERED	AREA FOUND	SEX	% SPAWNED
56523	1L	11-Oct	18-Oct	2	F	100
56348	1L	8-Oct	18-Oct	2	M	
56586	1L	12-Oct	18-Oct	2	M	
56414	1L	8-Oct	18-Oct	2	M	
56186	1L	6-Oct	18-Oct	2	M	
56539	1L	11-Oct	18-Oct	2	F	100
56388	1L	8-Oct	18-Oct	2	F	100
56204	1L	6-Oct	18-Oct	2	M	
56563	1L	11-Oct	18-Oct	2	F	100
56396	1L	8-Oct	18-Oct	2	M	
56288	1L	7-Oct	18-Oct	2	F	100
	1L		18-Oct	2	M	
56216	1L	7-Oct	18-Oct	2	F	100
56474	1L	11-Oct	18-Oct	2	M	
56272	1L	7-Oct	18-Oct	2	F	100
56308	1L	7-Oct	18-Oct	2	F	100
56555	1L	11-Oct	18-Oct	2	F	100
56347	1L	8-Oct	18-Oct	2	M	
56447	1L	11-Oct	18-Oct	2	M	
56366	1L	8-Oct	18-Oct	2	M	
56506	1L	11-Oct	18-Oct	2	M	
56462	1L	11-Oct	18-Oct	2	M	
56537	1L	11-Oct	18-Oct	2	M	
56360	1L	8-Oct	19-Oct	4	F	100
56432	1L	8-Oct	19-Oct	4	M	
56250	1L	7-Oct	19-Oct	4	M	
56393	1L	8-Oct	19-Oct	4	M	
56231	1L	7-Oct	19-Oct	4	F	100
56357	1L	8-Oct	19-Oct	4	M	
56416	1L	8-Oct	19-Oct	4	F	100
56386	1L	8-Oct	19-Oct	4	M	
56129	1L	4-Oct	19-Oct	4	M	
56318	1L	8-Oct	19-Oct	4	F	100
56603	1L	12-Oct	19-Oct	4	M	
56302	1L	7-Oct	19-Oct	4	M	
56397	1L	8-Oct	19-Oct	4	M	
56294	1L	7-Oct	19-Oct	4	M	
56402	1L	8-Oct	19-Oct	5	F	100
56431	1L	8-Oct	19-Oct	5	M	
56428	1L	8-Oct	19-Oct	5	M	
56164	1L	6-Oct	19-Oct	5	M	
56427	1L	8-Oct	19-Oct	5	F	100
56108	1L	4-Oct	19-Oct	5	M	
56282	1L	7-Oct	19-Oct	5	M	
56264	1L	7-Oct	19-Oct	5	F	100

TAG #	SECONDARY MARK	DATE TAGGED	DATE RECOVERED	AREA FOUND	SEX	% SPAWNED
56313	1L	7-Oct	19-Oct	5	F	100
56252	1L	7-Oct	19-Oct	5	M	
56221	1L	7-Oct	19-Oct	5	M	
56438	1L	8-Oct	19-Oct	5	M	
56538	1L	11-Oct	19-Oct	5	M	
56425	1L	8-Oct	19-Oct	5	M	
56139	1L	4-Oct	19-Oct	5	F	100
56505	1L	11-Oct	19-Oct	5	M	
56543	1L	11-Oct	19-Oct	1	M	
56127	1L	4-Oct	19-Oct	1	M	
56120	1L	4-Oct	19-Oct	1	M	
56540	1L	11-Oct	19-Oct	1	F	100
56324	1L	8-Oct	19-Oct	1	M	
56605	1L	12-Oct	19-Oct	1	M	
56639	1L	13-Oct	19-Oct	1	M	
56300	1L	7-Oct	19-Oct	1	M	
56651	1L	13-Oct	19-Oct	1	F	100
56746	1L	13-Oct	19-Oct	1	F	50
56408	1L	8-Oct	19-Oct	1	M	
56518	1L	11-Oct	19-Oct	1	M	
56271	1L	7-Oct	19-Oct	1	M	
56370	1L	8-Oct	19-Oct	1	M	
56111	1L	4-Oct	19-Oct	1	F	100
56507	1L	11-Oct	19-Oct	1	M	
56261	1L	7-Oct	19-Oct	1	M	
56165	1L	6-Oct	19-Oct	1	M	
56304	1L	7-Oct	19-Oct	1	M	
56579	1L	12-Oct	19-Oct	1	M	
56265	1L	7-Oct	19-Oct	1	M	
56319	1L	8-Oct	19-Oct	1	F	100
56437	1L	8-Oct	19-Oct	1	M	
56564	1L	11-Oct	19-Oct	1	F	100
56327	1L	8-Oct	19-Oct	1	M	
56229	1L	7-Oct	19-Oct	1	M	
56309	1L	7-Oct	19-Oct	1	M	
56412	1L	8-Oct	19-Oct	1	M	
56380	1L	8-Oct	19-Oct	1	M	
56440	1L	11-Oct	19-Oct	1	M	
56573	1L	12-Oct	20-Oct	3	M	
56766	1L	15-Oct	20-Oct	3	F	100
56395	1L	8-Oct	20-Oct	3	M	
56453	1L	11-Oct	20-Oct	3	M	
56135	1L	4-Oct	20-Oct	3	F	100
56666	1L	13-Oct	21-Oct	3	M	
56488	1L	11-Oct	21-Oct	3	M	

TAG #	SECONDARY MARK	DATE TAGGED	DATE RECOVERED	AREA FOUND	SEX	% SPAWNED
56346	1L	8-Oct	21-Oct	3	M	
56399	1L	8-Oct	21-Oct	3	M	
56463	1L	11-Oct	21-Oct	3	M	
56472	1L	11-Oct	21-Oct	3	F	100
56184	1L	6-Oct	21-Oct	3	F	100
56571	1L	12-Oct	21-Oct	3	F	100
56225	1L	7-Oct	21-Oct	3	M	
56481	1L	11-Oct	21-Oct	3	M	
56689	1L	13-Oct	21-Oct	3	M	
56326	1L	8-Oct	21-Oct	3	M	
56582	1L	12-Oct	21-Oct	3	M	
56490	1L	11-Oct	21-Oct	3	F	100
56493	1L	11-Oct	21-Oct	3	F	100
56679	1L	13-Oct	21-Oct	3	M	
56273	1L	7-Oct	21-Oct	3	F	100
56511	1L	11-Oct	21-Oct	3	F	100
56340	1L	8-Oct	21-Oct	3	F	100
56890	1L	18-Oct	21-Oct	3	M	
56354	1L	8-Oct	21-Oct	3	M	
56477	1L	11-Oct	21-Oct	3	M	
56512	1L	11-Oct	21-Oct	3	M	
56781	1L	15-Oct	21-Oct	3	M	
56442	1L	11-Oct	21-Oct	3	F	100
56599	1L	12-Oct	21-Oct	3	F	100
56641	1L	13-Oct	21-Oct	3	F	100
56855	1L	15-Oct	21-Oct	3	F	100
56606	1L	12-Oct	21-Oct	3	F	100
56451	1L	11-Oct	21-Oct	3	M	
56614	1L	12-Oct	21-Oct	3	M	
	1L		21-Oct	6	M	
56583	1L	12-Oct	21-Oct	6	M	
56236	1L	7-Oct	21-Oct	6	M	
	1L		21-Oct	6	M	
56921	1L	18-Oct	22-Oct	2	F	100
56691	1L	13-Oct	22-Oct	2	F	100
56773	1L	15-Oct	22-Oct	2	F	100
56789	1L	15-Oct	22-Oct	2	F	100
56782	1L	15-Oct	22-Oct	2	F	100
56671	1L	13-Oct	22-Oct	2	M	
	1L		22-Oct	2	M	
56829	1L	15-Oct	22-Oct	2	F	100
56577	1L	12-Oct	22-Oct	2	M	
56487	1L	11-Oct	22-Oct	2	M	
56685	1L	13-Oct	22-Oct	2	M	
56775	1L	15-Oct	22-Oct	2	F	100

TAG #	SECONDARY MARK	DATE TAGGED	DATE RECOVERED	AREA FOUND	SEX	% SPAWNED
56568	1L	12-Oct	22-Oct	2	F	100
56596	1L	12-Oct	22-Oct	2	F	100
56220	1L	7-Oct	22-Oct	2	M	
56657	1L	13-Oct	22-Oct	2	M	
56443	1L	11-Oct	22-Oct	2	M	
56665	1L	13-Oct	22-Oct	2	M	
56342	1L	8-Oct	22-Oct	2	F	100
56499	1L	11-Oct	22-Oct	2	M	
56922	1L	18-Oct	22-Oct	2	M	
56561	1L	11-Oct	22-Oct	2	M	
56718	1L	13-Oct	22-Oct	2	M	
56600	1L	12-Oct	22-Oct	2	M	
56475	1L	11-Oct	22-Oct	2	M	
56546	1L	11-Oct	22-Oct	2	M	
56598	1L	12-Oct	22-Oct	2	M	
56592	1L	12-Oct	22-Oct	2	F	100
56617	1L	12-Oct	22-Oct	2	M	
56504	1L	11-Oct	22-Oct	2	F	100
56613	1L	12-Oct	22-Oct	2	M	
56630	1L	12-Oct	22-Oct	2	M	
56704	1L	13-Oct	22-Oct	2	F	100
56484	1L	11-Oct	22-Oct	2	F	100
56567	1L	12-Oct	22-Oct	2	F	100
Total week 4	**206**					
cumulative	**280**					
56338	1L	8-Oct	25-Oct	3	F	100
56717	1L	13-Oct	25-Oct	4	F	100
56604	1L	12-Oct	25-Oct	4	M	
56720	1L	13-Oct	25-Oct	4	F	100
57080	1L	22-Oct	25-Oct	4	F	100
56841	1L	15-Oct	25-Oct	4	F	100
56885	1L	18-Oct	25-Oct	4	M	
56733	1L	13-Oct	25-Oct	4	M	
56525	1L	11-Oct	25-Oct	4	F	100
56275	1L	7-Oct	25-Oct	4	M	
56530	1L	11-Oct	25-Oct	4	F	100
56810	1L	15-Oct	25-Oct	4	F	100
56560	1L	11-Oct	25-Oct	4	F	100
56816	1L	15-Oct	25-Oct	4	M	
56413	1L	8-Oct	25-Oct	4	F	100
56767	1L	15-Oct	25-Oct	4	M	
56418	1L	8-Oct	25-Oct	4	F	100

TAG #	SECONDARY MARK	DATE TAGGED	DATE RECOVERED	AREA FOUND	SEX	% SPAWNED
56508	1L	11-Oct	25-Oct	4	M	
56932	1L	18-Oct	25-Oct	4	M	
56552	1L	11-Oct	25-Oct	4	F	100
56461	1L	11-Oct	25-Oct	4	M	
56972	1L	20-Oct	25-Oct	4	M	
56854	1L	15-Oct	25-Oct	4	M	
56805	1L	15-Oct	25-Oct	2	F	100
56774	1L	15-Oct	25-Oct	2	M	
56736	1L	13-Oct	25-Oct	2	M	
56417	1L	8-Oct	25-Oct	2	M	
56944	1L	18-Oct	25-Oct	2	M	
56529	1L	11-Oct	25-Oct	2	F	100
56452	1L	11-Oct	25-Oct	2	M	
56833	1L	15-Oct	25-Oct	2	M	
	1L		25-Oct	2	M	
56844	1L	15-Oct	25-Oct	2	M	
	1L		25-Oct	2	M	
56609	1L	12-Oct	25-Oct	2	M	
57129	1L	22-Oct	25-Oct	2	F	100
56559	1L	11-Oct	25-Oct	2	F	100
56514	1L	11-Oct	25-Oct	2	M	
	1L		25-Oct	2	M	
	1L		25-Oct	2	F	100
56521	1L	11-Oct	25-Oct	2	M	
56880	1L	18-Oct	25-Oct	2	M	
56893	1L	18-Oct	25-Oct	2	M	
56797	1L	15-Oct	25-Oct	2	M	
56533	1L	11-Oct	25-Oct	2	F	100
56562	1L	11-Oct	25-Oct	2	F	100
56798	1L	15-Oct	25-Oct	2	M	
56819	1L	15-Oct	25-Oct	2	M	
56881	1L	18-Oct	25-Oct	2	M	
56835	1L	15-Oct	25-Oct	2	M	
	1L		25-Oct	2	M	
56847	1L	15-Oct	25-Oct	2	M	
56822	1L	15-Oct	25-Oct	2	M	
57007	1L	20-Oct	25-Oct	2	F	100
57025	1L	20-Oct	25-Oct	2	F	100
56457	1L	11-Oct	25-Oct	2	M	
56857	1L	15-Oct	25-Oct	2	M	
56580	1L	12-Oct	25-Oct	2	M	
56907	1L	18-Oct	25-Oct	2	M	
56771	1L	15-Oct	25-Oct	2	M	
56321	1L	8-Oct	25-Oct	2	M	
56655	1L	13-Oct	25-Oct	2	M	

TAG #	SECONDARY MARK	DATE TAGGED	DATE RECOVERED	AREA FOUND	SEX	% SPAWNED
56469	1L	11-Oct	25-Oct	2	M	
56419	1L	8-Oct	25-Oct	2	F	100
56509	1L	11-Oct	25-Oct	2	M	
56547	1L	11-Oct	25-Oct	2	M	
	1L		25-Oct	2	M	
56485	1L	11-Oct	25-Oct	2	M	
56375	1L	8-Oct	25-Oct	2	M	
56331	1L	8-Oct	25-Oct	2	M	
56715	1L	13-Oct	25-Oct	2	M	
56423	1L	8-Oct	25-Oct	2	M	
56522	1L	11-Oct	25-Oct	2	M	
56832	1L	15-Oct	25-Oct	1	M	
56624	1L	12-Oct	25-Oct	1	M	
56362	1L	8-Oct	25-Oct	1	M	
56460	1L	11-Oct	25-Oct	1	M	
	1L		25-Oct	1	M	
56566	1L	12-Oct	25-Oct	1	M	
56473	1L	11-Oct	25-Oct	1	M	
56693	1L	13-Oct	25-Oct	1	M	
	1L		25-Oct	1	M	
56441	1L	11-Oct	25-Oct	1	M	
56769	1L	15-Oct	25-Oct	1	F	100
56312	1L	7-Oct	26-Oct	5	F	100
56637	1L	13-Oct	26-Oct	5	M	
56633	1L	12-Oct	26-Oct	5	M	
56385	1L	8-Oct	26-Oct	5	M	
56248	1L	7-Oct	26-Oct	5	M	
56622	1L	12-Oct	26-Oct	5	M	
56695	1L	13-Oct	26-Oct	5	F	100
56202	1L	6-Oct	26-Oct	5	F	100
56195	1L	6-Oct	26-Oct	5	M	
56310	1L	7-Oct	26-Oct	5	F	100
56279	1L	7-Oct	26-Oct	5	M	
56696	1L	13-Oct	26-Oct	5	F	100
	1L		26-Oct	5	M	
56517	1L	11-Oct	26-Oct	5	M	
56322	1L	8-Oct	26-Oct	5	M	
56406	1L	8-Oct	26-Oct	5	F	100
56569	1L	12-Oct	26-Oct	5	M	
56589	1L	12-Oct	26-Oct	5	F	100
56647	1L	13-Oct	26-Oct	5	M	
56584	1L	12-Oct	26-Oct	5	F	100
56741	1L	13-Oct	26-Oct	5	F	100
56334	1L	8-Oct	26-Oct	5	F	100
56709	1L	13-Oct	26-Oct	5	M	

TAG #	SECONDARY MARK	DATE TAGGED	DATE RECOVERED	AREA FOUND	SEX	% SPAWNED
56281	1L	7-Oct	26-Oct	5	F	100
56627	1L	12-Oct	26-Oct	5	M	
57040	1L	20-Oct	26-Oct	5	M	
56233	1L	7-Oct	26-Oct	5	M	
	1L		26-Oct	5	M	
56889	1L	18-Oct	26-Oct	1	M	
56611	1L	12-Oct	26-Oct	1	M	
56793	1L	15-Oct	26-Oct	1	M	
56450	1L	11-Oct	26-Oct	1	F	100
56663	1L	13-Oct	26-Oct	1	M	
56747	1L	13-Oct	26-Oct	1	M	
56934	1L	18-Oct	26-Oct	1	M	
56807	1L	15-Oct	26-Oct	1	M	
56619	1L	12-Oct	26-Oct	1	M	
56824	1L	15-Oct	26-Oct	1	M	
56737	1L	13-Oct	26-Oct	1	M	
56581	1L	12-Oct	26-Oct	1	M	
56656	1L	13-Oct	26-Oct	1	F	100
56792	1L	15-Oct	26-Oct	1	M	
56634	1L	13-Oct	26-Oct	1	M	
56574	1L	12-Oct	26-Oct	1	M	
56448	1L	11-Oct	26-Oct	1	M	
	1L		26-Oct	1	M	
56478	1L	11-Oct	26-Oct	1	F	100
56519	1L	11-Oct	26-Oct	1	M	
56444	1L	11-Oct	26-Oct	1	M	
56852	1L	15-Oct	26-Oct	1	M	
56815	1L	15-Oct	26-Oct	1	M	
56631	1L	12-Oct	26-Oct	1	M	
56283	1L	7-Oct	26-Oct	1	F	100
56937	1L	18-Oct	26-Oct	1	M	
56549	1L	11-Oct	26-Oct	1	M	
56809	1L	15-Oct	26-Oct	1	M	
56648	1L	13-Oct	26-Oct	1	M	
56834	1L	15-Oct	26-Oct	1	M	
56743	1L	13-Oct	26-Oct	1	M	
56673	1L	13-Oct	26-Oct	1	F	100
56916	1L	18-Oct	26-Oct	1	M	
56703	1L	13-Oct	26-Oct	1	M	
56548	1L	11-Oct	26-Oct	1	M	
56900	1L	18-Oct	26-Oct	1	M	
56645	1L	13-Oct	26-Oct	1	M	
56171	1L	6-Oct	26-Oct	1	M	
56851	1L	15-Oct	31-Oct	6	F	100
57038	1L	20-Oct	31-Oct	6	F	100

TAG #	SECONDARY MARK	DATE TAGGED	DATE RECOVERED	AREA FOUND	SEX	% SPAWNED
56595	1L	12-Oct	31-Oct	6	F	100
Total week 5	**153**					
cumulative	**433**					
56940	1L	18-Oct	1-Nov	3	F	100
56806	1L	15-Oct	1-Nov	3	F	100
56471	1L	11-Oct	1-Nov	3	M	
56960	1L	20-Oct	1-Nov	3	M	
56837	1L	15-Oct	1-Nov	3	F	100
57066	1L	20-Oct	1-Nov	3	M	
56729	1L	13-Oct	1-Nov	3	M	
56711	1L	13-Oct	1-Nov	3	M	
57217	1L	25-Oct	1-Nov	3	F	100
57112	1L	22-Oct	1-Nov	3	M	
57207	1L	25-Oct	1-Nov	3	M	
57011	1L	20-Oct	1-Nov	3	F	100
56915	1L	18-Oct	1-Nov	3	F	100
56910	1L	18-Oct	1-Nov	6	F	100
56483	1L	11-Oct	2-Nov	5	F	100
56588	1L	12-Oct	2-Nov	5	F	100
56979	1L	20-Oct	2-Nov	5	F	100
56253	1L	7-Oct	2-Nov	5	M	
56992	1L	20-Oct	3-Nov	1	F	100
56817	1L	15-Oct	3-Nov	1	M	
56528	1L	11-Oct	3-Nov	1	F	100
56888	1L	18-Oct	3-Nov	1	M	
56923	1L	18-Oct	3-Nov	1	M	
57198	1L	25-Oct	3-Nov	1	F	100
56642	1L	13-Oct	3-Nov	1	F	100
57116	1L	22-Oct	3-Nov	1	F	100
56930	1L	18-Oct	3-Nov	1	M	
56942	1L	18-Oct	3-Nov	1	M	
57141	1L	22-Oct	3-Nov	5	F	100
56677	1L	13-Oct	3-Nov	5	M	
57077	1L	22-Oct	3-Nov	4	F	100
56214	1L	7-Oct	3-Nov	4	F	100
56967	1L	20-Oct	3-Nov	4	F	100
56969	1L	20-Oct	3-Nov	4	M	
56953	1L	18-Oct	3-Nov	4	M	
56961	1L	20-Oct	3-Nov	4	F	100
57078	1L	22-Oct	3-Nov	4	F	100
56424	1L	8-Oct	3-Nov	4	F	100
57018	1L	20-Oct	3-Nov	4	M	

TAG #	SECONDARY MARK	DATE TAGGED	DATE RECOVERED	AREA FOUND	SEX	% SPAWNED
56482	1L	11-Oct	3-Nov	4	M	
57289	1L	25-Oct	3-Nov	2	F	100
56846	1L	15-Oct	3-Nov	2	M	
57068	1L	20-Oct	3-Nov	2	F	100
56615	1L	12-Oct	3-Nov	2	F	100
56636	1L	13-Oct	3-Nov	2	M	
57125	1L	22-Oct	3-Nov	2	F	100
57033	1L	20-Oct	3-Nov	2	M	
57286	1L	25-Oct	3-Nov	2	F	100
57208	1L	25-Oct	3-Nov	2	F	100
56919	1L	18-Oct	3-Nov	2	F	100
57160	1L	22-Oct	3-Nov	2	F	100
57263	1L	25-Oct	3-Nov	2	F	100
57250	1L	25-Oct	3-Nov	2	M	
56974	1L	20-Oct	3-Nov	2	M	
57192	1L	25-Oct	3-Nov	2	M	
57265	1L	25-Oct	3-Nov	2	F	100
57266	1L	25-Oct	3-Nov	2	F	100
57205	1L	25-Oct	3-Nov	2	F	100
57185	1L	25-Oct	3-Nov	2	M	
56973	1L	20-Oct	3-Nov	2	M	
57161	1L	22-Oct	3-Nov	2	F	100
57065	1L	20-Oct	3-Nov	2	F	100
57310	1L	28-Oct	3-Nov	2	F	100
56820	1L	15-Oct	3-Nov	2	M	
56908	1L	18-Oct	3-Nov	2	F	100
57054	1L	20-Oct	3-Nov	2	F	100
56307	1L	7-Oct	3-Nov	2	F	100
	1L		3-Nov	2	M	
56558	1L	11-Oct	3-Nov	2	M	
56719	1L	13-Oct	3-Nov	2	M	
57174	1L	22-Oct	3-Nov	2	M	
57173	1L	22-Oct	3-Nov	2	M	
	1L		3-Nov	2	M	
57245	1L	25-Oct	3-Nov	2	F	
57261	1L	25-Oct	3-Nov	2	F	100
57190	1L	25-Oct	3-Nov	2	F	100
57238	1L	25-Oct	4-Nov	5	M	
57246	1L	25-Oct	4-Nov	5	F	0
57176	1L	22-Oct	4-Nov	5	M	
56379	1L	8-Oct	4-Nov	5	F	100
56480	1L	11-Oct	4-Nov	5	F	100
	1L		4-Nov	5	M	
56998	1L	20-Oct	4-Nov	5	M	
56742	1L	13-Oct	4-Nov	5	M	

TAG #	SECONDARY MARK	DATE TAGGED	DATE RECOVERED	AREA FOUND	SEX	% SPAWNED
57283	1L	25-Oct	4-Nov	5	M	
57100	1L	22-Oct	4-Nov	5	M	
57087	1L	22-Oct	4-Nov	1	F	100
57212	1L	25-Oct	4-Nov	1	F	100
57194	1L	25-Oct	4-Nov	1	M	
56902	1L	18-Oct	4-Nov	1	M	
57331	1L	28-Oct	4-Nov	1	M	
57082	1L	22-Oct	4-Nov	1	M	
57031	1L	20-Oct	4-Nov	1	F	100
57009	1L	20-Oct	4-Nov	1	M	
57336	1L	28-Oct	4-Nov	1	M	
56966	1L	20-Oct	4-Nov	1	M	
57104	1L	22-Oct	4-Nov	1	M	
57072	1L	20-Oct	4-Nov	1	M	
56653	1L	13-Oct	4-Nov	1	M	
57220	1L	25-Oct	4-Nov	1	M	
56926	1L	18-Oct	4-Nov	1	M	
57148	1L	22-Oct	4-Nov	1	M	
57063	1L	20-Oct	4-Nov	1	M	
56980	1L	20-Oct	4-Nov	1	M	
57121	1L	22-Oct	4-Nov	1	M	
57333	1L	28-Oct	4-Nov	1	M	
56697	1L	13-Oct	4-Nov	1	M	
57150	1L	22-Oct	4-Nov	1	M	
57024	1L	20-Oct	4-Nov	1	M	
56694	1L	13-Oct	4-Nov	1	M	
56686	1L	13-Oct	4-Nov	1	M	
57235	1L	25-Oct	4-Nov	1	F	100
57363	1L	28-Oct	4-Nov	1	F	100
57056	1L	20-Oct	4-Nov	1	M	
57136	1L	22-Oct	4-Nov	1	M	
57034	1L	20-Oct	4-Nov	1	M	
56959	1L	18-Oct	4-Nov	1	M	
57281	1L	25-Oct	4-Nov	1	F	100
56950	1L	18-Oct	4-Nov	1	M	
56503	1L	11-Oct	4-Nov	1	M	
56976	1L	20-Oct	4-Nov	1	M	
57108	1L	22-Oct	4-Nov	1	M	
56963	1L	20-Oct	4-Nov	1	M	
56975	1L	20-Oct	4-Nov	1	F	100
57202	1L	25-Oct	4-Nov	1	F	100
57019	1L	20-Oct	4-Nov	1	M	
57106	1L	22-Oct	4-Nov	1	M	
57219	1L	25-Oct	4-Nov	1	F	100
56983	1L	20-Oct	4-Nov	1	M	

TAG #	SECONDARY MARK	DATE TAGGED	DATE RECOVERED	AREA FOUND	SEX	% SPAWNED
57171	1L	22-Oct	4-Nov	1	M	
56790	1L	15-Oct	4-Nov	1	M	
56456	1L	11-Oct	4-Nov	1	M	
57186	1L	25-Oct	4-Nov	1	F	100
56632	1L	12-Oct	4-Nov	1	M	
57184	1L	25-Oct	4-Nov	1	F	100
56882	1L	18-Oct	4-Nov	1	M	
57053	1L	20-Oct	4-Nov	1	M	
57032	1L	20-Oct	4-Nov	1	M	
57222	1L	25-Oct	4-Nov	1	M	
56943	1L	18-Oct	4-Nov	1	M	
57375	1L	28-Oct	4-Nov	1	M	
56845	1L	15-Oct	4-Nov	1	F	100
57200	1L	25-Oct	5-Nov	5	F	0
56840	1L	15-Oct	5-Nov	5	F	100
	1L		5-Nov	5	F	100
57107	1L	22-Oct	5-Nov	5	M	
57206	1L	25-Oct	5-Nov	5	F	100
57103	1L	22-Oct	5-Nov	5	M	
56401	1L	8-Oct	5-Nov	1	M	
57010	1L	20-Oct	5-Nov	1	F	100
57170	1L	22-Oct	5-Nov	1	M	
56812	1L	15-Oct	5-Nov	1	M	
57027	1L	20-Oct	5-Nov	1	M	
56674	1L	13-Oct	5-Nov	1	M	
57166	1L	22-Oct	5-Nov	1	M	
57252	1L	25-Oct	5-Nov	1	M	
56909	1L	18-Oct	5-Nov	1	F	100
57089	1L	22-Oct	5-Nov	1	M	
56754	1L	14-Oct	5-Nov	1	M	
57183	1L	25-Oct	5-Nov	1	M	
57127	1L	22-Oct	5-Nov	1	M	
57143	1L	22-Oct	5-Nov	1	F	100
57055	1L	20-Oct	5-Nov	1	F	100
57284	1L	25-Oct	5-Nov	1	M	
57126	1L	22-Oct	5-Nov	1	M	
57236	1L	25-Oct	5-Nov	1	F	100
57306	1L	28-Oct	5-Nov	1	M	
56535	1L	11-Oct	5-Nov	1	F	100
56958	1L	18-Oct	5-Nov	1	M	
57294	1L	28-Oct	5-Nov	1	M	
57196	1L	25-Oct	5-Nov	1	M	
57070	1L	20-Oct	5-Nov	1	M	
56765	1L	15-Oct	5-Nov	1	M	
57105	1L	22-Oct	5-Nov	1	M	

TAG #	SECONDARY MARK	DATE TAGGED	DATE RECOVERED	AREA FOUND	SEX	% SPAWNED
Total week 6	**174**					
cumulative	**607**					
57258	1L	25-Oct	8-Nov	6	M	
57138	1L	22-Oct	8-Nov	6	F	100
57380	1L	28-Oct	8-Nov	6	F	100
57370	1L	28-Oct	8-Nov	6	M	
56681	1L	13-Oct	8-Nov	6	M	
56688	1L	13-Oct	9-Nov	5	M	
57302	1L	28-Oct	9-Nov	5	M	
57364	1L	28-Oct	9-Nov	3	F	100
57278	1L	25-Oct	9-Nov	7	M	
56952	1L	18-Oct	9-Nov	7	F	100
57343	1L	28-Oct	9-Nov	7	M	
57322	1L	28-Oct	10-Nov	2	F	100
57568	1L	2-Nov	10-Nov	2	M	
57501	1L	1-Nov	10-Nov	3	F	100
Total week 7	14					
cumulative	621					
56778	1L	15-Oct	17-Nov	3	M	
56779	1L	15-Oct	17-Nov	3	M	
57554	1L	2-Nov	17-Nov	3	F	100
56838	1L	15-Oct	17-Nov	3	M	
57506	1L	1-Nov	17-Nov	3	M	
57677	1L	3-Nov	17-Nov	3	F	100
57589	1L	2-Nov	17-Nov	3	M	
57678	1L	3-Nov	17-Nov	3	M	
57021	1L	20-Oct	17-Nov	5	F	100
57084	1L	22-Oct	17-Nov	5	F	100
57514	1L	1-Nov	17-Nov	4	F	100
57512	1L	1-Nov	17-Nov	4	M	
57043	1L	20-Oct	17-Nov	4	M	
56956	1L	18-Oct	17-Nov	4	F	100
56626	1L	12-Oct	17-Nov	4	M	
57319	1L	28-Oct	18-Nov	6	M	
57690	1L	3-Nov	18-Nov	6	M	
57626	1L	2-Nov	18-Nov	6	M	
57093	1L	22-Oct	18-Nov	5	M	
57330	1L	28-Oct	18-Nov	5	M	
57067	1L	20-Oct	18-Nov	2	F	100
57351	1L	28-Oct	18-Nov	2	M	
57556	1L	2-Nov	18-Nov	2	F	100

TAG #	SECONDARY MARK	DATE TAGGED	DATE RECOVERED	AREA FOUND	SEX	% SPAWNED
57017	1L	20-Oct	18-Nov	2	F	100
57725	1L	5-Nov	18-Nov	2	F	100
57201	1L	25-Oct	18-Nov	2	F	100
57575	1L	2-Nov	18-Nov	2	F	100
57517	1L	1-Nov	18-Nov	2	F	100
57716	1L	5-Nov	18-Nov	2	F	100
57109	1L	22-Oct	19-Nov	1	M	
57528	1L	2-Nov	19-Nov	1	M	
57232	1L	25-Oct	19-Nov	1	M	
57197	1L	25-Oct	19-Nov	1	M	
57696	1L	3-Nov	19-Nov	1	F	100
57320	1L	28-Oct	19-Nov	1	M	
57013	1L	20-Oct	19-Nov	1	M	
57550	1L	2-Nov	19-Nov	1	M	
57291	1L	28-Oct	19-Nov	1	F	100
57569	1L	2-Nov	19-Nov	1	M	
57243	1L	25-Oct	19-Nov	1	F	100
57640	1L	2-Nov	19-Nov	1	F	100
57664	1L	2-Nov	19-Nov	1	M	
56850	1L	15-Oct	19-Nov	1	F	100
57675	1L	3-Nov	19-Nov	1	M	
57387	1L	1-Nov	19-Nov	1	M	
57624	1L	2-Nov	19-Nov	1	F	100
56911	1L	18-Oct	19-Nov	1	M	
57668	1L	3-Nov	19-Nov	1	M	
57546	1L	2-Nov	19-Nov	1	F	100
57179	1L	22-Oct	19-Nov	1	M	
57122	1L	22-Oct	19-Nov	1	F	100
57039	1L	20-Oct	19-Nov	1	M	
57540	1L	2-Nov	19-Nov	1	F	100
57285	1L	25-Oct	20-Nov	1	F	100
57399	1L	1-Nov	20-Nov	1	F	100
57608	1L	2-Nov	20-Nov	1	M	
57660	1L	2-Nov	20-Nov	1	M	
57239	1L	25-Oct	20-Nov	1	F	100
57627	1L	2-Nov	20-Nov	1	F	100
57530	1L	2-Nov	20-Nov	1	M	
57346	1L	28-Oct	20-Nov	1	M	
57314	1L	28-Oct	20-Nov	1	M	
	1L		20-Nov	1	F	100
57354	1L	28-Oct	20-Nov	1	M	
57695	1L	3-Nov	20-Nov	1	F	100
57738	1L	5-Nov	20-Nov	1	F	100
57260	1L	25-Oct	20-Nov	1	F	100
57383	1L	28-Oct	20-Nov	1	F	100

TAG #	SECONDARY MARK	DATE TAGGED	DATE RECOVERED	AREA FOUND	SEX	% SPAWNED
57578	1L	2-Nov	20-Nov	1	F	100
57379	1L	28-Oct	20-Nov	1	F	100
57741	1L	5-Nov	20-Nov	1	M	
57385	1L	1-Nov	20-Nov	1	M	
	1L		20-Nov	1	M	
57602	1L	2-Nov	20-Nov	1	M	
57301	1L	28-Oct	20-Nov	1	M	
57394	1L	1-Nov	20-Nov	1	M	
57593	1L	2-Nov	20-Nov	1	M	
	1L		20-Nov	1	F	100
57616	1L	2-Nov	20-Nov	1	M	
57662	1L	2-Nov	20-Nov	1	M	
57658	1L	2-Nov	20-Nov	1	M	
57574	1L	2-Nov	20-Nov	5	F	100
57676	1L	3-Nov	21-Nov	5	M	
Total week 8	**83**					
cumulative	**704**					
57633	1L	2-Nov	24-Nov	2	M	
57621	1L	2-Nov	25-Nov	4	M	
57257	1L	25-Oct	25-Nov	5	M	
57579	1L	2-Nov	25-Nov	5	M	
57618	1L	2-Nov	25-Nov	5	F	100
57596	1L	2-Nov	26-Nov	1	M	
57566	1L	2-Nov	26-Nov	1	F	100
57748	1L	18-Nov	26-Nov	1	F	100
57673	1L	3-Nov	26-Nov	1	F	50
57313	1L	28-Oct	26-Nov	1	M	
Total week 9	**10**					
cumulative	**714**					
57747	1L	18-Nov	30-Nov	1	F	100
57707	1L	5-Nov	30-Nov	1	F	100
57244	1L	25-Oct	30-Nov	1	F	100
57341	1L	28-Oct	30-Nov	1	M	
57730	1L	5-Nov	30-Nov	3	F	100
57750	1L	18-Nov	30-Nov	3	M	
Total week 10	**6**					
cumulative	**720**					

TAG #	SECONDARY MARK	DATE TAGGED	DATE RECOVERED	AREA FOUND	SEX	% SPAWNED
57592	1L	2-Nov	7-Dec	1	M	
total week 11	**1**					
cumulative	**721**					

Appendix 4. Fish Information Summary System(FISS) Data

Appendix 5. Historical flows (m3/s) of the South Alouette River. Data From Inland Waters Directories (1991).

Appendix 6. Salmonid escapement to the South Alouette, Bridge and Seton River. (from Farwell et al. (1987) and DFO.)

Appendix 7. 1999 Flow Data