



**To:**                    Distribution List

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                                 Lower Fraser Area

**Date:**                December 1, 2006

### **Chilliwack River Recreational Fishery Assessment**

**September 15 - November 15, 2006**

#### **Regulations**

The fishing boundary for the Chilliwack River is from the mouth of Slesse Creek down to the boundary signs near its confluence with the Fraser River. The recreational fishery is closed at night, from one hour after sunset to one hour before sunrise.

During the study period, recreational catch limits was as follows:

- **Coho:** 4 hatchery fish (adipose fin clipped) per day
- **Chinook:** 4 per day, only 1 can be over 62 cm
- **Chum:** 1 per day

A complete listing of regulations can be viewed at the Fisheries and Oceans Canada Pacific Region Recreational Fishery webpage: [http://www.pac.dfo-mpo.gc.ca/recfish/default\\_e.htm](http://www.pac.dfo-mpo.gc.ca/recfish/default_e.htm)

All Fisheries and Oceans fishery notices can be viewed at:  
<http://ops.info.pac.dfo.ca/fishman/fnotice/fnotice.htm>

#### **Study Area**

The 2006 Chilliwack River sport fishery assessment study area was bounded by the confluence with the Fraser River (downstream boundary) and Slesse Creek (upstream boundary). The survey covered the entire area open for angling. The survey was separated into two regions. Region 1 being from the mouth of the Chilliwack River, upstream to the Vedder-Crossing bridge. Region 2 being from the Vedder-Crossing Bridge, upstream to the confluence with Slesse Creek.

## Survey Methods

The Chilliwack River recreational fishery survey began on September 15, 2006. Surveyors worked all weekends and holidays with rotating days off during the week. Surveyors worked one of two shifts (morning or afternoon) that spanned the entire daylight period. These shifts were randomly assigned to each survey day.

Surveyors conducted angler interviews at their survey sites to obtain the following information: where the angler was fishing, length of angling trip, how much longer they intended to fish, target species, gear used, total catch retained (AFC (adipose fin clipped) and non-AFC), total catch released. If permitted by the angler, the surveyor inspected the catch to determine whether the angler's species identification was correct and to check the catch for AFC status. If preferred by the angler, all heads from fish with adipose fins missing were retained by surveyors due to the possibility of CWT (coded-wire-tag) presence. If there was any doubt that an adipose might have been clipped for a particular fish, for example if the adipose fin was partially regenerated or malformed, the fish was classified as AFC. The angler always retained the option of turning the head into a local depot themselves. Interviews were used to determine harvest-per-unit effort (HPUE), release-per-unit effort (RPUE), and to summarize the angler characteristics listed above.

Daily effort was calculated using a combination of interview data, hourly rod counts conducted at the access survey site, and overflight rod counts of the survey area (conducted twice per week: one weekend and one weekday overflight). Using total effort, HPUE and RPUE is expanded to determine catch and release numbers by species for the entire study area. Such analyses are documented in several DFO publications (Schubert 1992; Schubert 1995).

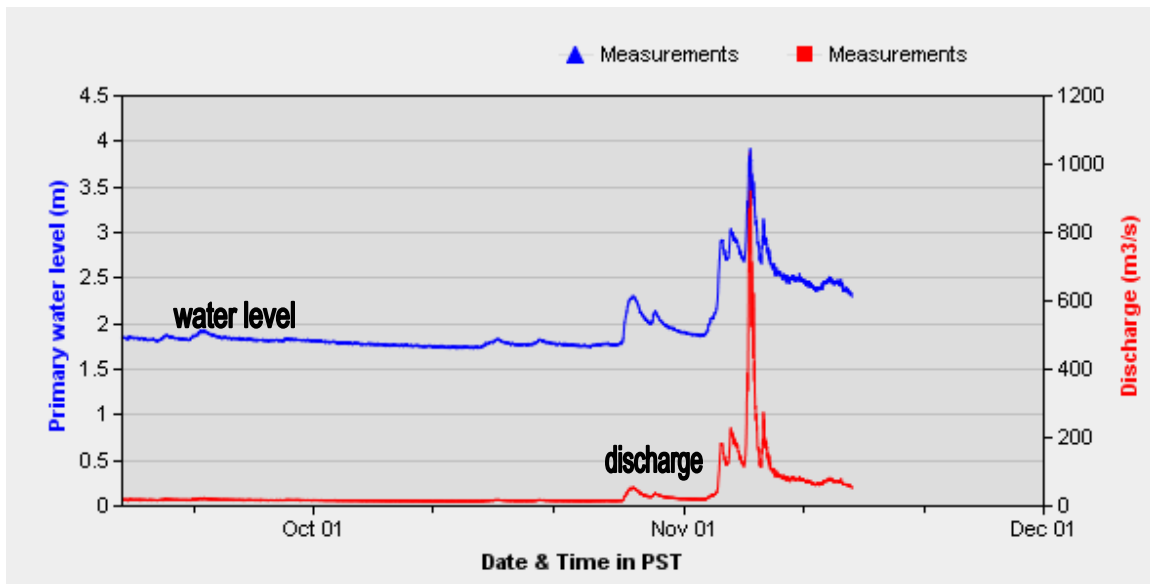
Three surveyors assessed the Chilliwack River recreational fishery. Two surveyors conducted a roving "bus-route" survey of the upper and lower regions of the river with no overlap in their respective ranges. These two surveyors conducted interviews of anglers in the process of fishing. The sites surveyed were pre-selected for a bi-weekly period based on angler distribution observed on previous roving surveys and overflights of the river. The survey start point and direction of travel (upstream or downstream) was randomized each survey day to ensure that the entire survey area was assessed and that each site was visited at different times of the survey day. A third surveyor was stationed at an access-point located at the Keith Wilson Bridge during September 15 to October 30 and Lickman Road during November 1-15. This surveyor conducted hourly rod counts and conducted complete interviews from anglers that had finished fishing for the day.

Data was stored and analyzed using DPA software. The data were verified in three steps. First, all field data sheets were examined for compliance with study procedures by the supervising technician and/or biologist. Second, during data entry, the data entry program performed 31 automatic error checks, including duplication detection, code validity, and range and consistency verification. Third, after data entry was complete, all data were imported into an excel file for verification with the field data sheets; all data were error checked once by the supervising technician. For analyses, data were blocked by day type (weekend and weekday) and region (region 1: below Vedder crossing; region 2: above Vedder crossing).

## Results

### Water Levels

In 2006, Chilliwack River water levels (Environment Canada's Chilliwack River Hydrometric Station) from September 15 to November 15, remained fairly steady until early November, in which a spike in water level was recorded. There was intense rain during this period. The level remained just below 2m during September up until the last week in October. The water level peaked at 3.8m on November 7.



**Figure 1** - Primary water levels and discharge on the Chilliwack River (at Vedder Crossing Hydrometric Station), Environment Canada Preliminary Results from September 15 to November 15, 2006. Website: <http://scitech.pyr.ec.gc.ca/waterweb/fullgraph.asp> (accessed on November 23, 2006).

### Survey Effort

The study period, from September 15 to November 15, covered 20 weekend/holidays and 42 weekday days; 100% of the weekend/holiday days and 57% of the weekday days were sampled by survey shifts. A total of 4,865 interviews were obtained from anglers.

Sixteen overflights were conducted from September 15 to November 15 (7 weekday and 9 weekend/holiday).

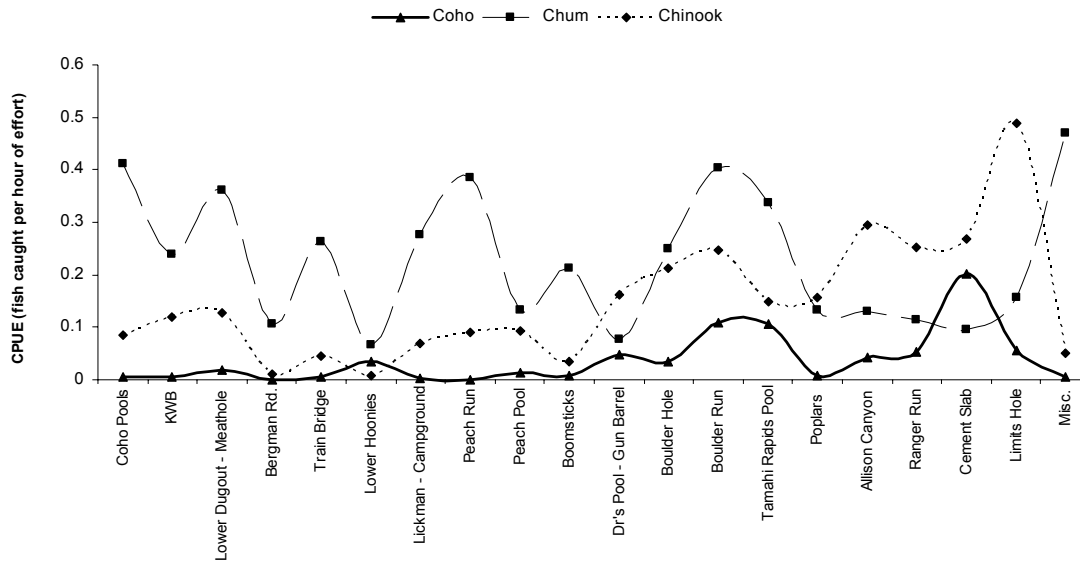
## Catch Rate

**Table 1** – Average harvest-per-unit-effort (HPUE) from September 15 to November 15, 2006, during the Chilliwack Recreational Fishery.

| HPUE          | Sep 15-30 | Oct 1-15 | Oct 16-31 | Nov 1-15 |
|---------------|-----------|----------|-----------|----------|
| Chinook Adult | 0.03      | 0.05     | 0.04      | 0.02     |
| Chinook Jack  | 0.008     | 0.004    | 0.003     | 0.002    |
| Coho Adult    | 0.007     | 0.005    | 0.01      | 0.04     |
| Coho Jack     | 0.001     | 0.001    | 0.0002    | 0.001    |
| Sockeye       | 0         | 0        | 0         | 0        |
| Chum          | 0.007     | 0.03     | 0.03      | 0.02     |

**Table 2** – Average release-per-unit-effort (RPUE) from September 15 to November 15, 2006, during the Chilliwack Recreational Fishery.

| RPUE          | Sep 15-30 | Oct 1-15 | Oct 16-31 | Nov 1-15 |
|---------------|-----------|----------|-----------|----------|
| Chinook Adult | 0.05      | 0.1      | 0.2       | 0.1      |
| Chinook Jack  | 0.009     | 0.005    | 0.003     | 0        |
| Coho Adult    | 0.005     | 0.01     | 0.03      | 0.1      |
| Coho Jack     | 0.005     | 0.001    | 0.001     | 0.0002   |
| Sockeye       | 0.001     | 0.0003   | 0.0003    | 0.0003   |
| Chum          | 0.02      | 0.2      | 0.3       | 0.3      |



**Figure 2** – Spatial distribution of catch rate (harvest and released per hour combined) for Chinook, Coho and Chum Salmon for the 2006 Chilliwack River Recreational Fishery, during September 15 to November 15.

During September 15-30, 70% of the interviewed anglers were targeting coho, 20% had no preference and were targeting any species, and 10% were targeting chinook. The species of salmon retained by anglers in September were chinook, coho and chum.

During October 1-31, 65% of the anglers were targeting coho, 23% had no preference and were targeting any species, 11% were targeting chinook, and 1% were targeting chum. The species of salmon retained by anglers in October were chinook, coho, and chum.

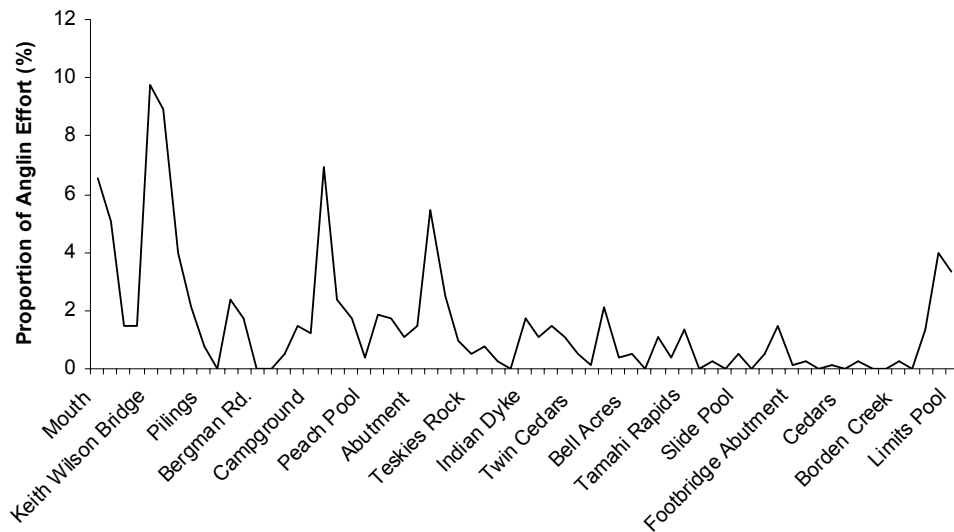
During November 1-15, 66% of the anglers were targeting coho, 30% had no preference and were targeting any species, 3% were targeting chinook, and 1% were targeting chum. The species of salmon retained by anglers in November were chinook, coho, and chum.

Catch Inspection

In September, catch was inspected for 93% of the creel interviews. The anglers had correctly identified the species in 100% of these inspections. In October, catch was inspected for 87% of the creel interviews. The anglers had correctly identified the species in 100% of these inspections. In November, catch was inspected for 95% of the creel interviews. The anglers had correctly identified the species in 100% of these inspections.

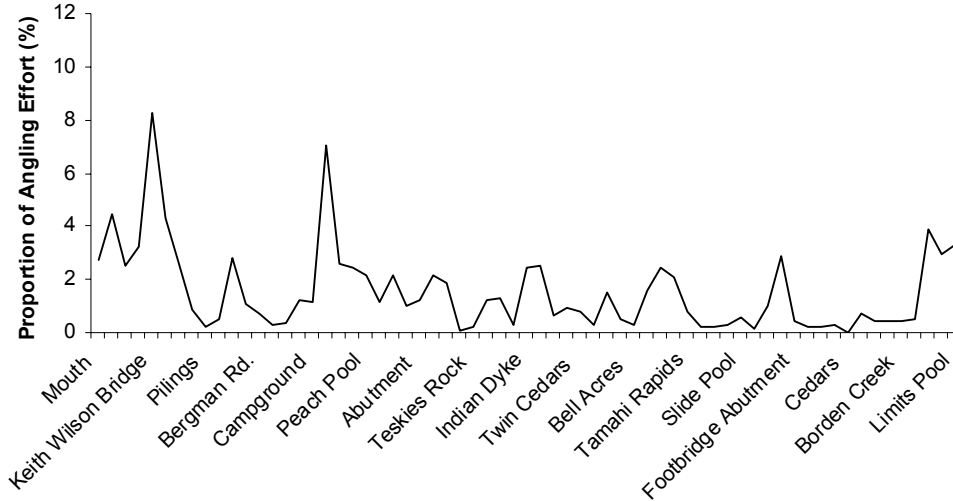
Angler Effort (spatial)

Angling effort in **September** was heavier in region one than in region two; based on overflight rod counts, 71% of the effort occurred in region one (downstream of Vedder Crossing) and 29% in region two (upstream of Vedder Crossing) (Figure 3).



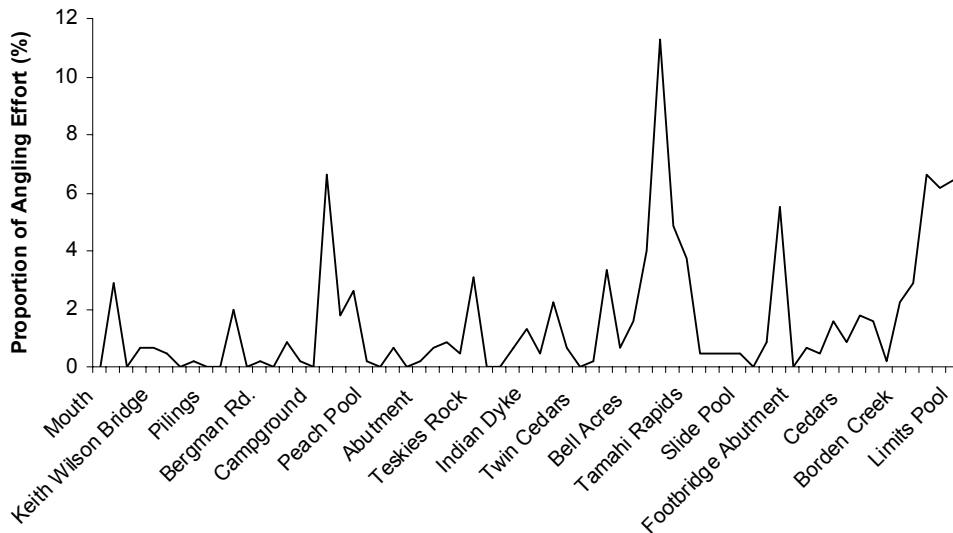
**Figure 3** – Distribution of spatial angling effort for the entire survey area from **September 15-30**, during the 2006 Chilliwack Recreational Fishery Assessment.

Angling effort in **October** was more uniformly distributed between the two regions; based on overflight rod counts, 59% of the effort occurred in region one and 41% in region two (Figure 4).



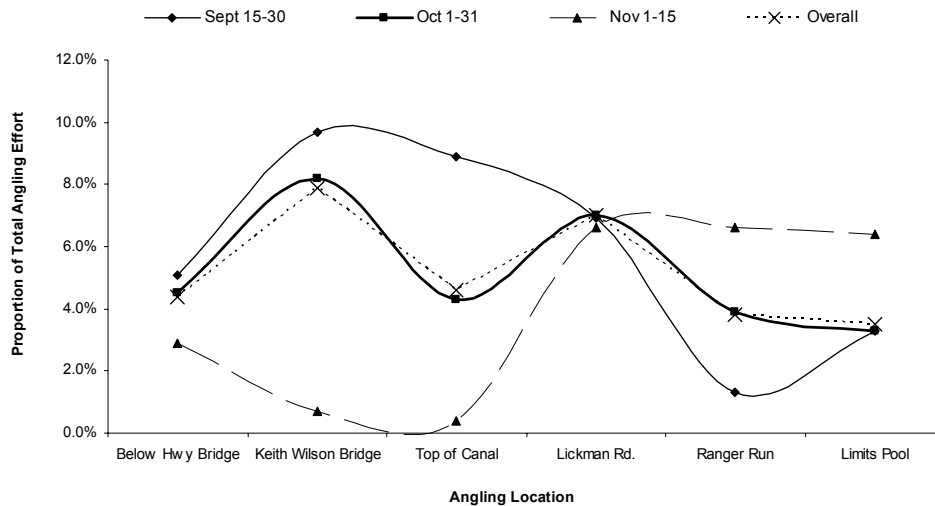
**Figure 4** – Distribution of spatial angling effort for the entire survey area from **October 1-31**, during the 2006 Chilliwack Recreational Fishery Assessment.

Angling effort in **November** was heavier in region two than in region one; based on overflight rod counts, 21 % of the effort occurred in region one and 79% in region two (Figure 5).



**Figure 5** – Distribution of spatial angling effort for the entire survey area from **November 1-15**, during the 2006 Chilliwack Recreational Fishery Assessment.

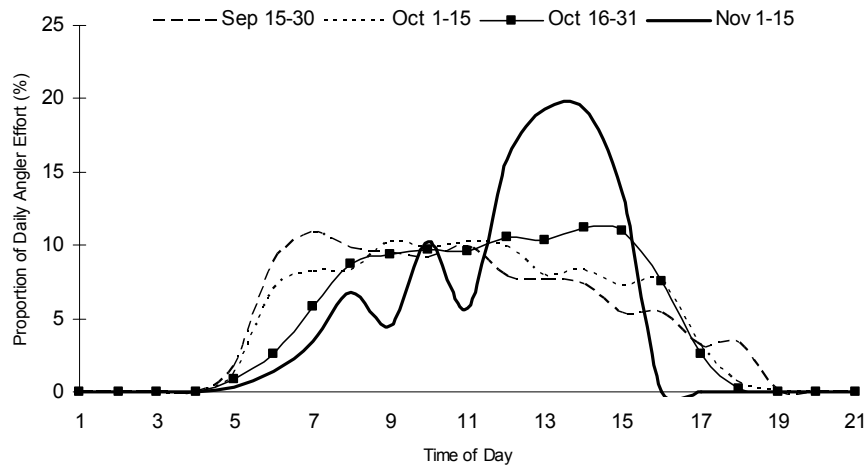
Throughout the entire study period, region one had 58% of the total effort with region two accounting for 42%. Of the entire effort, 31% of total effort can be accounted for by 6 popular angling locations (Figure 6).



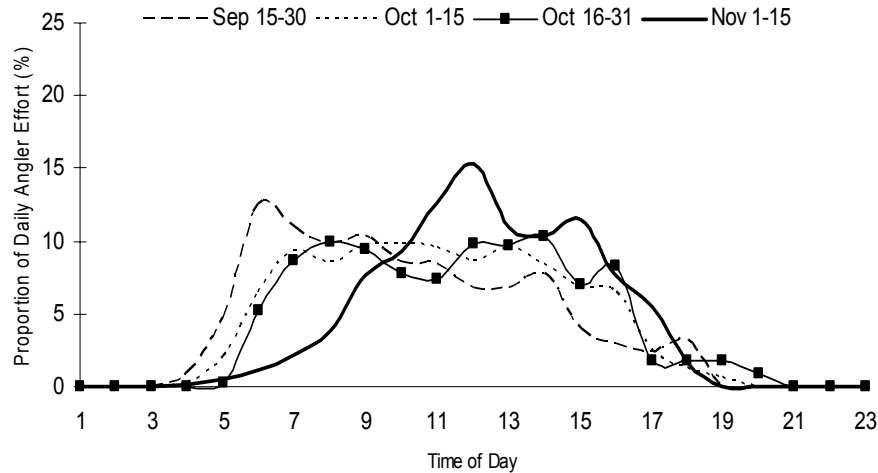
**Figure 6** – Spatial distribution of angler effort for the 2006 Chilliwack River Recreational Fishery, at 6 popular angling locations, for the entire study area, separated by month, during September 15 to November 15.

Angler Effort (temporal)

Anglers fished throughout the daylight hours. Effort for weekdays during September 15 to late October was fairly constant throughout the daylight hours. However, during November 1-15, weekday effort peaked around 1pm. Weekend effort ranged between 8% and 16% throughout the daylight hours. (Figure 7 and 8).



**Figure 7** - Hourly angler effort profile for **weekdays** during the 2006 Chilliwack River Recreational Fishery Assessment.



**Figure 8** - Hourly angler effort profiles for **weekends** during the 2006 Chilliwack River Recreational Fishery Assessment.

### Referenced Material

Schubert, N.D. 1992. Angler Effort and Catch in the 1985-1988 Lower Fraser River Sport Fishery. Canadian Manuscript Report of Fisheries and Aquatic Sciences No. 2170.

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Pollock, K.H., C.M. Jones, and T.L. Brown. 1994. Angler survey methods and their applications in fisheries management. American Fisheries Society Special Publications 25.

Guthrie, D., J.M. Hoenig, M. Holliday, C.M. Jones, M.J. Mills, S.A. Moberly, K.H. Pollock, and D.R. Talhelm, editors. 1991. Creel and angler surveys in fisheries management. American Fisheries Society Symposium 12.

### Acknowledgements

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**Table 3 -** Chilliwack River recreational fishery assessment final results from **September 15-30, 2006**. Data stratified into weekend (including holidays) and weekday.

**CHILLIWACK RIVER RECREATIONAL FISHERY ASSESSMENT  
FINAL RESULTS**

*(STUDY PERIOD: Sept 15-30, 2006)*

| SOURCE DATA   |                           |   |          |    |
|---|---------------------------|---|----------|----|
|   | Weekends                  |   | Weekdays |    |
|   | Open Days in Study Period | 5 |          | 11 |
| Number of Survey Shifts   | 5                         |   | 7        |    |
| Number of Interviews  | 510                       |   | 461      |    |
| Interview Hours   | 1,422                     |   | 1,674    |    |
| Number of Instantaneous Rod Counts (overflights)                  | 2                         |   | 2        |    |
| Mean Rod Count (Instantaneous)                                    | 221                       |   | 154      |    |
| Proportion of Effort in the Instantaneous Effort Count Time Block | 0.08                      |   | 0.09     |    |
| Estimated Average Daily Effort (Hours)                            | 2,762                     |   | 1,711    |    |
| Estimated Total Effort (Hours)                                    | 13,866                    |   | 17,947   |    |

| CATCH ESTIMATES            |            |            |            |             |
|----------------------------|------------|------------|------------|-------------|
|                            | Weekends   |            | Weekdays   |             |
|                            | Harvest    | Release    | Harvest    | Release     |
| <b>Chinook Adult</b>       | <b>182</b> | <b>365</b> | <b>680</b> | <b>1083</b> |
| marked (adipose missing)   | 14         | —          | 0          | —           |
| unmarked (adipose present) | 168        | —          | 680        | —           |
| <b>Chinook Jack</b>        | <b>157</b> | <b>93</b>  | <b>110</b> | <b>191</b>  |
| marked (adipose missing)   | 7          | —          | 0          | —           |
| unmarked (adipose present) | 150        | —          | 110        | —           |
| <b>Coho Adult</b>          | <b>84</b>  | <b>59</b>  | <b>133</b> | <b>105</b>  |
| marked (adipose missing)   | 77         | —          | 133        | —           |
| unmarked (adipose present) | 7          | —          | 0          | —           |
| <b>Coho Jack</b>           | <b>0</b>   | <b>72</b>  | <b>16</b>  | <b>82</b>   |
| marked (adipose missing)   | 0          | —          | 16         | —           |
| unmarked (adipose present) | 0          | —          | 0          | —           |
| <b>Sockeye</b>             | <b>0</b>   | <b>21</b>  | <b>0</b>   | <b>16</b>   |
| <b>Pink</b>                | —          | —          | —          | —           |
| <b>Chum</b>                | <b>125</b> | <b>185</b> | <b>101</b> | <b>376</b>  |

**Table 4 -** Chilliwack River recreational fishery assessment final results from **October 1-15, 2006**. Data stratified into weekend (including holidays) and weekday.

**CHILLIWACK RIVER RECREATIONAL FISHERY ASSESSMENT  
FINAL RESULTS**

*(STUDY PERIOD: Oct 1-15, 2006)*

|   | SOURCE DATA |          |
|---|-------------|----------|
|   | Weekends    | Weekdays |
| Open Days in Study Period   | 6           | 9        |
| Number of Survey Shifts   | 6           | 5        |
| Number of Interviews  | 1,170       | 569      |
| Interview Hours   | 4,236       | 1,691    |
| Number of Instantaneous Rod Counts (overflights)                  | 3           | 2        |
| Mean Rod Count (Instantaneous)                                    | 696         | 337      |
| Proportion of Effort in the Instantaneous Effort Count Time Block | 0.09        | 0.1      |
| Estimated Average Daily Effort (Hours)                            | 7,733       | 3,370    |
| Estimated Total Effort (Hours)                                    | 45,413      | 30,258   |

|                            | CATCH ESTIMATES |              |              |              |
|----------------------------|-----------------|--------------|--------------|--------------|
|                            | Weekends        |              | Weekdays     |              |
|                            | Harvest         | Release      | Harvest      | Release      |
| <b>Chinook Adult</b>       | <b>2,125</b>    | <b>3,719</b> | <b>1,617</b> | <b>3,832</b> |
| marked (adipose missing)   | 9               | —            | 41           | —            |
| unmarked (adipose present) | 2,116           | —            | 1,576        | —            |
| <b>Chinook Jack</b>        | <b>190</b>      | <b>116</b>   | <b>141</b>   | <b>277</b>   |
| marked (adipose missing)   | 19              | —            | 74           | —            |
| unmarked (adipose present) | 171             | —            | 67           | —            |
| <b>Coho Adult</b>          | <b>230</b>      | <b>609</b>   | <b>150</b>   | <b>301</b>   |
| marked (adipose missing)   | 230             | —            | 124          | —            |
| unmarked (adipose present) | 0               | —            | 26           | —            |
| <b>Coho Jack</b>           | <b>58</b>       | <b>28</b>    | <b>15</b>    | <b>15</b>    |
| marked (adipose missing)   | 58              | —            | 15           | —            |
| unmarked (adipose present) | 0               | —            | 0            | —            |
| <b>Sockeye</b>             | <b>0</b>        | <b>10</b>    | <b>0</b>     | <b>15</b>    |
| <b>Pink</b>                | —               | —            | —            | —            |
| <b>Chum</b>                | <b>1,337</b>    | <b>8,301</b> | <b>1,029</b> | <b>8,033</b> |

**Table 5 - Chilliwack River recreational fishery assessment final results from **October 16-31, 2006**.** Data stratified into weekend (including holidays) and weekday.

**CHILLIWACK RIVER RECREATIONAL FISHERY ASSESSMENT  
FINAL RESULTS**

*(STUDY PERIOD: Oct 16-31, 2006)*

| SOURCE DATA   |                           |   |          |    |
|---|---------------------------|---|----------|----|
|   | Weekends                  |   | Weekdays |    |
|   | Open Days in Study Period | 4 |          | 12 |
| Number of Survey Shifts   | 4                         |   | 6        |    |
| Number of Interviews  | 740                       |   | 814      |    |
| Interview Hours   | 2,481                     |   | 2,790    |    |
| Number of Instantaneous Rod Counts (overflights)                  | 2                         |   | 2        |    |
| Mean Rod Count (Instantaneous)                                    | 730                       |   | 402      |    |
| Proportion of Effort in the Instantaneous Effort Count Time Block | 0.09                      |   | 0.1      |    |
| Estimated Average Daily Effort (Hours)                            | 8,111                     |   | 4,020    |    |
| Estimated Total Effort (Hours)                                    | 35,291                    |   | 47,938   |    |

| CATCH ESTIMATES            |              |              |              |               |
|----------------------------|--------------|--------------|--------------|---------------|
|                            | Weekends     |              | Weekdays     |               |
|                            | Harvest      | Release      | Harvest      | Release       |
| <b>Chinook Adult</b>       | <b>1,205</b> | <b>5,826</b> | <b>2,104</b> | <b>11,804</b> |
| marked (adipose missing)   | 13           | —            | 30           | —             |
| unmarked (adipose present) | 1,192        | —            | 2,074        | —             |
| <b>Chinook Jack</b>        | <b>46</b>    | <b>93</b>    | <b>200</b>   | <b>138</b>    |
| marked (adipose missing)   | 0            | —            | 14           | —             |
| unmarked (adipose present) | 46           | —            | 186          | —             |
| <b>Coho Adult</b>          | <b>528</b>   | <b>1,642</b> | <b>443</b>   | <b>530</b>    |
| marked (adipose missing)   | 528          | —            | 415          | —             |
| unmarked (adipose present) | 0            | —            | 28           | —             |
| <b>Coho Jack</b>           | <b>0</b>     | <b>0</b>     | <b>15</b>    | <b>71</b>     |
| marked (adipose missing)   | 0            | —            | 15           | —             |
| unmarked (adipose present) | 0            | —            | 0            | —             |
| <b>Sockeye</b>             | <b>0</b>     | <b>0</b>     | <b>0</b>     | <b>27</b>     |
| <b>Pink</b>                | —            | —            | —            | —             |
| <b>Chum</b>                | <b>994</b>   | <b>8,412</b> | <b>1,476</b> | <b>12,796</b> |

**Table 6 -** Chilliwack River recreational fishery assessment final results from **November 1-15, 2006**. Data stratified into weekend (including holidays) and weekday.

**CHILLIWACK RIVER RECREATIONAL FISHERY ASSESSMENT  
FINAL RESULTS**

*(STUDY PERIOD: Nov 1-15, 2006)*

| SOURCE DATA   |         |  |          |  |
|---|---------|--|----------|--|
|   | Weekend |  | Weekdays |  |
| Open Days in Study Period   | 5       |  | 10       |  |
| Number of Survey Shifts   | 5       |  | 6        |  |
| Number of Interviews  | 357     |  | 244      |  |
| Interview Hours   | 1,154   |  | 750      |  |
| Number of Instantaneous Rod Counts (overflights)                  | 2       |  | 1        |  |
| Mean Rod Count (Instantaneous)                                    | 174     |  | 103      |  |
| Proportion of Effort in the Instantaneous Effort Count Time Block | 0.14    |  | 0.1      |  |
| Estimated Average Daily Effort (Hours)                            | 1,243   |  | 1,030    |  |
| Estimated Total Effort (Hours)                                    | 6,548   |  | 8,700    |  |

| CATCH ESTIMATES            |            |              |            |              |
|----------------------------|------------|--------------|------------|--------------|
|                            | Weekends   |              | Weekdays   |              |
|                            | Harvest    | Release      | Harvest    | Release      |
| <b>Chinook Adult</b>       | <b>29</b>  | <b>237</b>   | <b>291</b> | <b>1,603</b> |
| marked (adipose missing)   | 0          | —            | 0          | —            |
| unmarked (adipose present) | 29         | —            | 291        | —            |
| <b>Chinook Jack</b>        | <b>6</b>   | <b>0</b>     | <b>21</b>  | <b>0</b>     |
| marked (adipose missing)   | 0          | —            | 6          | —            |
| unmarked (adipose present) | 6          | —            | 15         | —            |
| <b>Coho Adult</b>          | <b>305</b> | <b>948</b>   | <b>416</b> | <b>1,040</b> |
| marked (adipose missing)   | 293        | —            | 416        | —            |
| unmarked (adipose present) | 12         | —            | 0          | —            |
| <b>Coho Jack</b>           | <b>0</b>   | <b>4</b>     | <b>15</b>  | <b>0</b>     |
| marked (adipose missing)   | 0          | —            | 15         | —            |
| unmarked (adipose present) | 0          | —            | 0          | —            |
| <b>Sockeye</b>             | <b>0</b>   | <b>0</b>     | <b>0</b>   | <b>6</b>     |
| <b>Pink</b>                | —          | —            | —          | —            |
| <b>Chum</b>                | <b>130</b> | <b>3,370</b> | <b>183</b> | <b>2,093</b> |

**Table 7** - Chilliwack River recreational fishery assessment final results from September 15 to November 15, 2006. Total catch and release (weekend and weekday combined).

|                          | <b>September</b> | <b>October</b> | <b>November</b> | <b>Total</b>   |
|--------------------------|------------------|----------------|-----------------|----------------|
|                          | 15-30            | 1-31           | 1-15            |                |
| Number of Interviews     | 971              | 3,293          | 601             | <b>4,865</b>   |
| Interview Hours          | 3,096            | 11,199         | 1,904           | <b>16,199</b>  |
| Number of Overflights    | 4                | 9              | 3               | <b>16</b>      |
| Average Overflight Count | 188              | 559            | 151             | <b>299</b>     |
| <b>ANGLER EFFORT</b>     |                  |                |                 |                |
| Estimated Effort (hours) | 31,658           | 158,900        | 15,248          | <b>205,806</b> |
| <b>ESTIMATED HARVEST</b> |                  |                |                 |                |
| Chinook Adult            | 862              | 7,051          | 320             | <b>8,233</b>   |
| Chinook Jack             | 267              | 577            | 27              | <b>871</b>     |
| Coho Adult               | 217              | 1,351          | 721             | <b>2,289</b>   |
| Coho Jack                | 16               | 88             | 15              | <b>119</b>     |
| Sockeye                  | 0                | 0              | 0               | <b>0</b>       |
| Pink                     | 0                | 0              | 0               | <b>0</b>       |
| Chum                     | 226              | 4,836          | 313             | <b>5,375</b>   |
| <b>ESTIMATED RELEASE</b> |                  |                |                 |                |
| Chinook Adult            | 1,448            | 25,181         | 1,840           | <b>28,469</b>  |
| Chinook Jack             | 284              | 624            | 0               | <b>908</b>     |
| Coho Adult               | 164              | 3,082          | 1,988           | <b>5,234</b>   |
| Coho Jack                | 154              | 114            | 4               | <b>272</b>     |
| Sockeye                  | 37               | 52             | 6               | <b>95</b>      |
| Pink                     | 0                | 0              | 0               | <b>0</b>       |
| Chum                     | 561              | 37,542         | 5,463           | <b>43,566</b>  |