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Chilliwack River Recreational Fishery Assessment (Creel Survey)
September 15-November 15, 2004

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Regulations

The fishing boundary for the Chilliwack River is from 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 (September 15 – November 15), salmon 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

Study Area

The Chilliwack River sport fishery assessment study area is bounded by its confluence with the Fraser River (downstream boundary) and Slesse Creek (upstream boundary).

Survey Methods

The Chilliwack River recreational fishery survey began on September 15, 2004. 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. Shifts were randomly assigned to each survey day. Only one shift was necessary in November due to shorter daylight hours. 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 (AFC, non-AFC, and unknown). If permitted by the angler, the surveyor inspected the catch to determine whether the angler's species identification was correct. Interviews were used to determine catch-per-unit effort (CPUE), release-per-unit effort (RPUE), and to summarize the angler characteristics listed above.

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Daily effort is calculated using a combination of interview data, hourly rod counts conducted at the survey sites, and over flight rod counts of the survey area (conducted twice per week: one weekend and one weekday over flight). Using total effort, CPUE 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).

For all chinook, AFC and non-AFC fish, scale samples were removed systematically throughout the survey area and period. When time and anglers permitted, heads were retained by the surveyor from AFC chinook. Both scale book numbers and head tag numbers were recorded on the interview sheets.

Three surveyors assessed the Chilliwack River recreational fishery. **Two surveyors** conducted a bus-route survey of the upper and lower sections of the river with no overlap in their respective ranges; the Vedder Bridge was selected as the boundary between the upper and lower sections of the river. These two surveyors conducted interviews of anglers in the process of fishing. The sites surveyed were pre-selected for a biweekly period based angler distribution observed on previous roving surveys and over flights of the river. The surveyors 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 from September 15-26 and at Lickman Road from September 29-November 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 September, October and November analyses, data were blocked by day type (weekend and weekday) and region (region 1: below Vedder crossing; region 2: above Vedder crossing).

Results

In 2004, water levels (Environment Canada's Chilliwack River Hydrometric station) from September 15 to November 15 increased to a maximum water level of 1.60 meters on September 17, subsequently decreasing to approximately 0.90 meters on October 29 (Figure 1). At the beginning of November, discharge increased dramatically causing the water level to jump 0.7m to the study period maximum of 1.60m. Another increase in discharge around November 9 saw the water level reach the peak of 1.60m one more

time. Since the Chilliwack Station was not recording water level data from September 29 to October 20, the Primary Water Level/Discharge chart for the Fraser River at Hope was included.

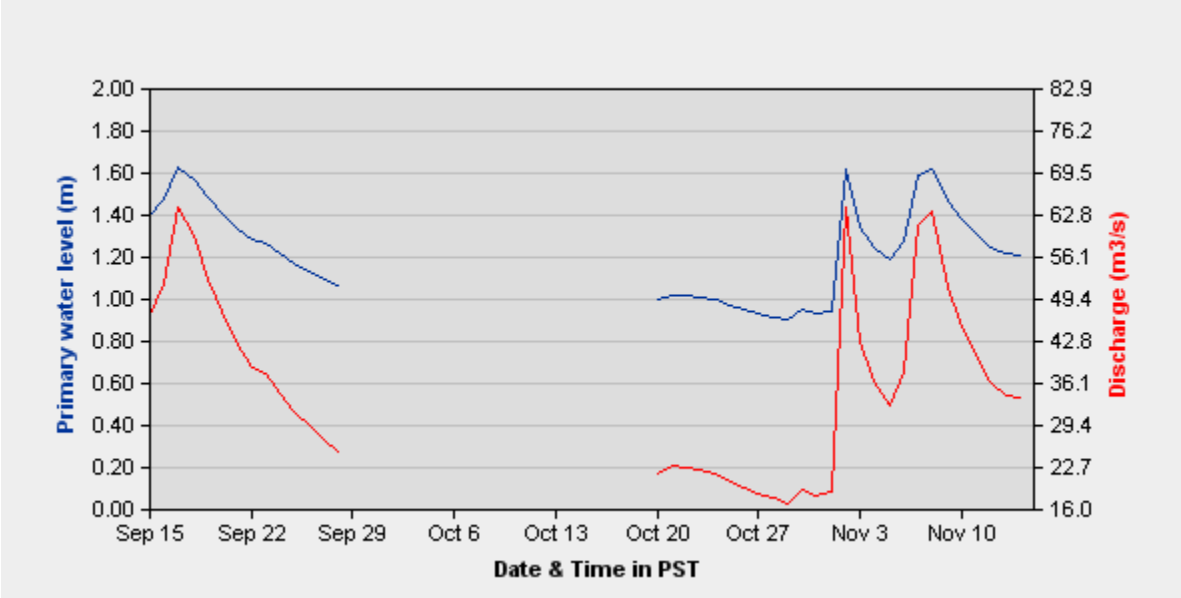

Figure 1. Primary water levels and discharge at the Chilliwack River (above Slesse Creek) Hydrometric Station, Environment Canada Preliminary Results from September 15 to November 15, 2004.

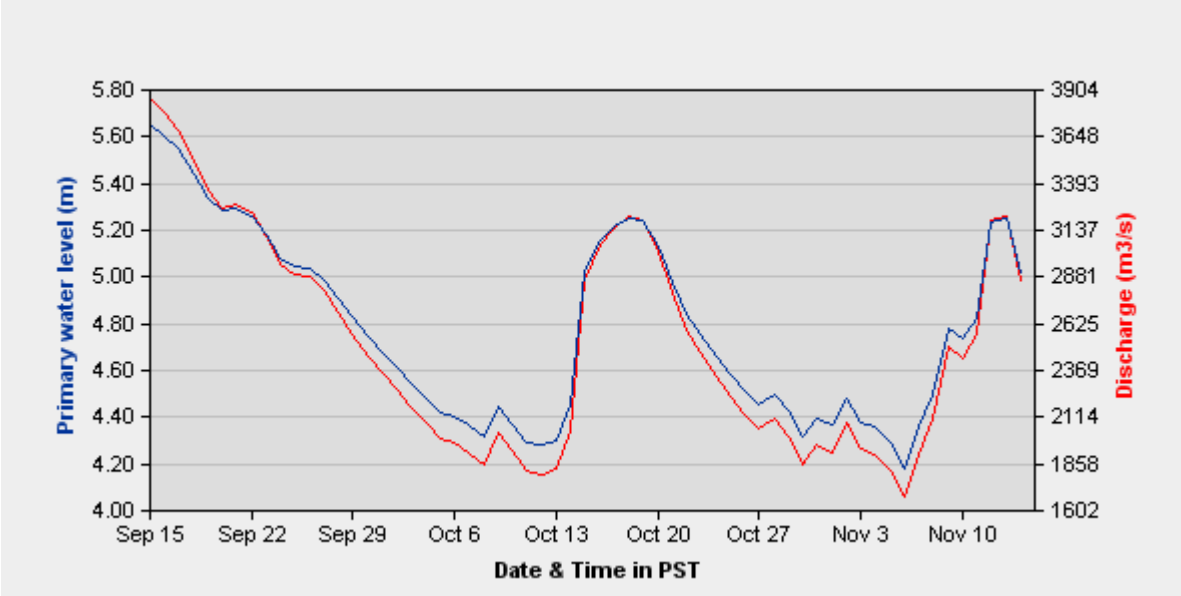

Figure 2. Primary Water Level and Discharge for the Fraser at Hope. Website: http://scitech.pyr.ec.gc.ca/waterweb/fullgraph.asp (accessed on Jan. 14, 2004).

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Survey Effort

The study period, from September 15 to November 15 covered 20 weekend and 42 weekday days; 100% of the weekend days and 60% of the weekday days were sampled by survey shifts. A total of 1,228 interviews in September, 4112 interviews in October and 756 interviews in November were obtained from anglers.

Five over flights were conducted in September (3 weekend and 2 weekday), 9 over flights were conducted in October (5 weekend and 4 weekday) and 4 over flights were conducted in November (2 weekend and 2 weekday). Over flight rod counts in September ranged from 51 to 530 anglers actively fishing (rods counted). Over flight rod counts in October ranged from 375 to 1201 anglers actively fishing and in November over flight rod counts ranged from 85 to 189. Effort in September was similar between region 1 and region 2; based on over flight rod counts, 53% of the effort occurred in region 1 (downstream of Vedder Crossing) and 47% in region 2 (upstream of Vedder Crossing). In October, effort in region 1 dropped to 40%, while in region 2 effort increased to 60%. November saw the effort in region 1 and region 2 remain relatively constant at 39% and 61% respectively.

Angler Effort

Daily Profile: Anglers fished through the daylight hours. Effort for weekends peaked midday (12:00 to 13:00), declined in the afternoon, and peaked again at 18:00. Effort for weekdays was relatively constant throughout the daylight period (8:00 to 19:00) (Figure 2).

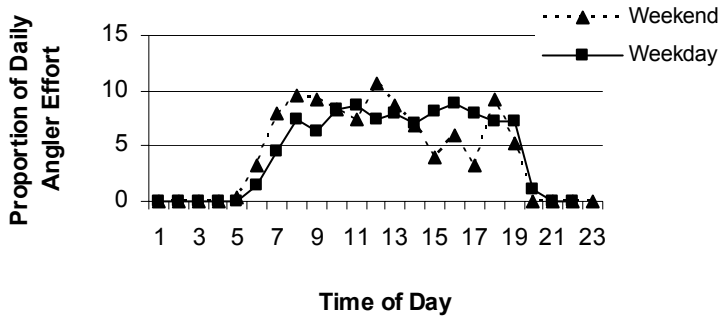

Figure 3. Hourly angler effort profiles for September 15-30 in the 2004 Chilliwack River Recreational Fishery.

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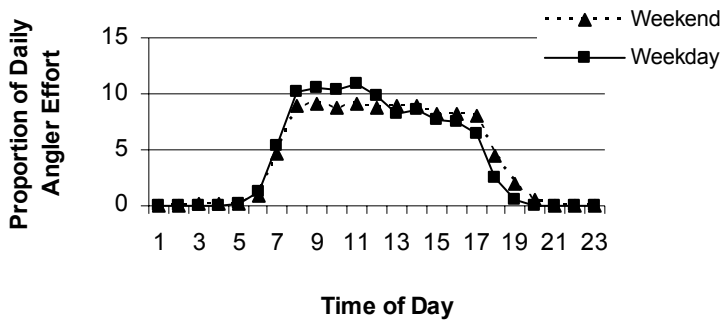

Figure 4. Hourly angler effort profiles for October 1-31 in the 2004 Chilliwack River Recreational Fishery.

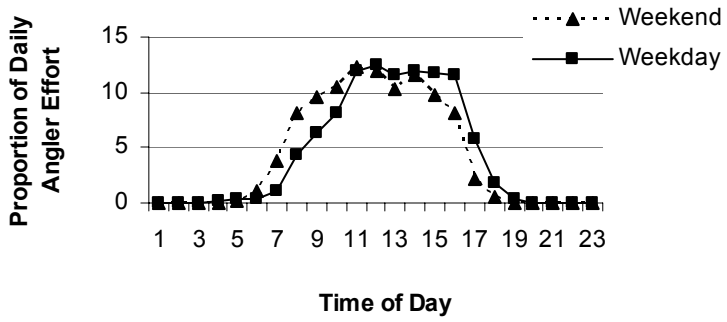

Figure 5. Hourly angler effort profiles for November 1-15 in the 2004 Chilliwack River Recreation Fishery.

Total Angler Effort: total effort was 52,209 angler hours in September. In region 1 the total effort was 29,781 hours and in region 2 the total effort was 22,428 hours. In October total angler effort was 210,551 hours, with 89,656 angler hours in region 1 and 120,895 angler hours in region 2 (Tables 1-4). Total effort in November was 17,199 hours; with 6,068 hours in region 1 and 11,131 hours in region 2.

Catch-per-unit Effort

On the Chilliwack River in September, 78% of the anglers were targeting coho, 20% had no preference and were targeting any species, and 3% were targeting chinook. In October, 70% of anglers were targeting coho, 23% had no preference and 7% were targeting chinook. November brought little change to the species anglers were most interesting in catching, with coho representing 69%, chinook 3%, chum 1% and 27% of anglers having no preference at all. The species of salmon retained by anglers in the study period were chinook, coho, and chum.

In September, the average catch-per-unit-effort (CPUE) was 0.014 for chinook, 0.007 for chinook jack, 0.017 for coho, 0.001 for coho jack, and 0.002 for chum. Total catch was 772 chinook, 360 chinook jack, 957 coho, 50 coho jack and 134 chum. An estimated 5% of all chinook retained by anglers were marked (adipose-fin clipped); total marked

chinook was 41. No chinook jack retained by anglers were marked. An estimated 99% of coho retained by anglers were marked (total marked coho was 951) and 76% of coho jacks were marked (total marked coho jacks were 38). In October, the average catch-per-unit-effort (CPUE) was 0.021 for chinook, 0.003 for chinook jack, 0.037 for coho, 0.0002 for coho jack and 0.017 for chum. Total catch was 4584 for chinook, 665 chinook jacks, 8560 coho, 29 coho jacks, and 3562 chum. An estimated 6% of all chinook retained by anglers were marked (total marked chinook was 258 fish), 2% of chinook jacks were marked (total marked chinook jacks was 12 fish), 98% of coho were marked (total marked coho was 8349 fish) and 41% of coho jacks were marked (total marked coho jacks was 12 fish). The average CPUE in November was 0.005 for chinook, 0.0004 for chinook jack, 0.032 for coho, 0.001 for coho jack and 0.045 for chum. Total catch for chinook was 107, chinook jack 7, coho 633, coho jack 16 and chum 688. There were no reported marked chinook or chinook jack during November, while 100% of all coho and coho jacks were marked (Tables 1-4).

Salmon species released by anglers included chinook, coho and chum. In September, the average release-per-unit-effort (RPUE) was 0.03 for chinook, 0.02 for chinook jack, 0.01 for coho, 0.0007 for coho jack, and 0.005 for chum. Total release was 1,811 chinook, 1,022 chinook jack, 573 coho, 37 coho jack and 271 chum. RPUE in October was 0.061 for chinook, 0.007 for chinook jacks, 0.046 for coho, 0.001 for coho jacks and 0.145 for chum. Estimated numbers of releases were 13,903 chinook, 1,723 chinook jacks, 10,465 coho, 124 coho jacks, 30,052 chum and 17 sockeye. In November, average RPUE was 0.034 for chinook, 0.0004 for chinook jacks, 0.134 for coho, 0.001 for coho jacks and 0.519 for chum, The total estimated release was 806 chinook, 7 chinook jacks, 2714 coho, 19 coho jacks and 9099 chum (Tables 1-4).

Catch Inspection: In September catch was inspected for 90% of the creel interviews. In 100% of these inspections, the anglers had correctly identified the species. In October, catch was inspected for 93% of the interviews and in 100% of these inspections the angler had correctly identified the species. In November, catch was inspected for 87% of the interviews and in 100% of these inspections the angler had correctly identified the species.

Table 1. Chilliwack River recreational fishery assessment final results from September 15 – 30, 2004. Data were stratified into weekend and weekday day types and region (region 1: below Vedder Crossing; region 2: above Vedder Crossing).

	SOURCE DATA	
	Weekend	**Weekday**
Open Days in Study Period	4	12
Number of Survey Shifts	4	7
Number of Interviews	611	617
Interview Hours	2,103	1,954
Number of Instantaneous Effort Counts	3	2
Mean Rod Count (Instantaneous Effort)	451	215
Proportion of Effort in the Instantaneous Effort Count Time Block	0.096	0.077
Estimated Daily Effort (Hours)	4,698	2,792
Estimated Total Effort (Hours)	18,638	33,571

	PRELIMINARY INSEASON CATCH ESTIMATES			
	Weekend		**Weekday**	
	Harvest	**Release**	**Harvest**	**Release**
CHINOOK ADULT	**251**	**616**	**521**	**1,195**
Marked (Adipose missing)	6	--	35	--
Unmarked (Adipose present)	245	--	486	--
CHINOOK JACK	**138**	**501**	**222**	**521**
Marked (Adipose missing)	0	--	0	--
Unmarked (Adipose present)	138	--	222	--
COHO ADULT	**249**	**150**	**708**	**423**
Marked (Adipose missing)	243	--	708	--
Unmarked (Adipose present)	6	--	0	--
COHO JACK	**18**	**6**	**32**	**31**
Marked (Adipose missing)	18	--	20	--
Unmarked (Adipose present)	0	--	12	--
SOCKEYE	**0**	**0**	**0**	**0**
PINK	**0**	**0**	**0**	**0**
CHUM	**24**	**74**	**110**	**197**

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Table 2. Chilliwack River recreational fishery assessment final results from October 1-31, 2004. Data were stratified into weekend and weekday day types and region (region 1: below Vedder Crossing; region 2: above Vedder Crossing).

	SOURCE DATA	
	Weekend	**Weekday**
Open Days in Study Period	11	20
Number of Survey Shifts	11	11
Number of Interviews	2,429	1,683
Interview Hours	8,935	5,880
Number of Instantaneous Effort Counts	5	4
Mean Rod Count (Instantaneous Effort)	920	450
Proportion of Effort in the Instantaneous Effort Count Time Block	0.091	0.089
Estimated Daily Effort (Hours)	10,110	5,056
Estimated Total Effort (Hours)	109,360	101,191

	PRELIMINARY INSEASON CATCH ESTIMATES			
	Weekend		**Weekday**	
	Harvest	**Release**	**Harvest**	**Release**
CHINOOK ADULT	**2,571**	**7,320**	**2,013**	**6,583**
Marked (Adipose missing)	187	--	71	--
Unmarked (Adipose present)	2,384	--	1,942	--
CHINOOK JACK	**313**	**1,122**	**352**	**601**
Marked (Adipose missing)	0	--	12	--
Unmarked (Adipose present)	313	--	340	--
COHO ADULT	**4,515**	**4,607**	**4,045**	**5,858**
Marked (Adipose missing)	4,355	--	3,994	--
Unmarked (Adipose present)	160	--	51	--
COHO JACK	**0**	**87**	**29**	**37**
Marked (Adipose missing)	0	--	12	--
Unmarked (Adipose present)	0	--	17	--
SOCKEYE	**0**	**0**	**0**	**17**
PINK	**0**	**0**	**0**	**0**
CHUM	**1,981**	**14,684**	**1,581**	**15,368**

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Table 3. Chilliwack River recreational fishery assessment final results from November 1-15, 2004. Data were stratified into weekend and weekday day types and region (region 1: below Vedder Crossing; region 2: above Vedder Crossing).

	SOURCE DATA	
	Weekend	**Weekday**
Open Days in Study Period	5	10
Number of Survey Shifts	5	6
Number of Interviews	432	324
Interview Hours	942	1,397
Number of Instantaneous Effort Counts	2	2
Mean Rod Count (Instantaneous Effort)	135	137
Proportion of Effort in the Instantaneous Effort Count Time Block	0.112	0.120
Estimated Daily Effort (Hours)	1,173	1,134
Estimated Total Effort (Hours)	5,864	11,335

	PRELIMINARY INSEASON CATCH ESTIMATES			
	Weekend		**Weekday**	
	Harvest	**Release**	**Harvest**	**Release**
CHINOOK ADULT	**19**	**88**	**88**	**718**
Marked (Adipose missing)	0	--	0	--
Unmarked (Adipose present)	19	--	88	--
CHINOOK JACK	**0**	**0**	**7**	**7**
Marked (Adipose missing)	0	--	0	--
Unmarked (Adipose present)	0	--	7	--
COHO ADULT	**283**	**1,399**	**350**	**1,315**
Marked (Adipose missing)	283	--	350	--
Unmarked (Adipose present)	0	--	0	--
COHO JACK	**9**	**2**	**7**	**17**
Marked (Adipose missing)	9	--	7	--
Unmarked (Adipose present)	0	--	0	--
SOCKEYE	**0**	**0**	**0**	**0**
PINK	**0**	**0**	**0**	**0**
CHUM	**252**	**2,869**	**436**	**6,230**

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Table 4. Chilliwack River recreational fishery assessment final results from September 15 – November 15, 2004. Total catch and release (weekend and weekday catch and release combined).

	September 15-30	October 1-31	November 1-15	Total
Number of Interviews	1,228	4,112	756	**6,096**
Number of Overflights	5	9	4	**18**
ANGLER EFFORT				
Estimated Effort (hours)	52,209	210,551	17,199	**279,959**
ESTIMATED HARVEST				
Chinook Adult	772	4,584	107	**5,463**
Chinook Jack	360	665	7	**1,032**
Coho Adult	957	8,560	633	**10,150**
Coho Jack	50	29	16	**95**
Sockeye	0	0	0	**0**
Pink	0	0	0	**0**
Chum	134	3,562	688	**4,384**
ESTIMATED RELEASE				
Chinook Adult	1,811	13,903	806	**16,520**
Chinook Jack	1,022	1,723	7	**2,752**
Coho Adult	573	10,465	2,714	**13,752**
Coho Jack	37	124	19	**180**
Sockeye	0	17	0	**17**
Pink	0	0	0	**0**
Chum	271	30,052	9,099	**39,422**

References

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.

Schubert, N.D. 1995. Angler Effort and Catch in Four Fraser River Sport Fisheries, 1991. Canadian Manuscript Report of Fisheries and Aquatic Sciences 2267.

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