



MEMORANDUM

To: Distribution List

From: Jason Mahoney
Assessment Biologist
Stock Assessment, Lower Fraser Area
Fisheries and Oceans Canada

Date: November 1st, 2005

FRASER RIVER RECREATIONAL FISHERY ASSESSMENT

May 1st – September 7th, 2005

Regulations

From May 1st to September 7th, the Fraser River mainstem was open for salmon fishing downstream of the Alexandra Bridge (Area 29: tidal and Region 2: non-tidal/freshwater). Sockeye retention was only permitted during September 1st to 7th.

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

Study Area

The Lower Fraser River recreational fishery assessment study area was bounded by the outlet of the Sumas River (Chilliwack, B.C.) and the outlet of the Coquihalla River (Hope, B.C.). The study area was divided into two regions: Region 1 included the mouth of the Sumas River, upstream to the Agassiz-Rosedale bridge; Region 2 included from the Agassiz-Rosedale bridge, upstream to the mouth of the Coquihalla River.

Methods

Surveyors worked all weekends and holidays. Surveyors worked one of two shifts (morning or afternoon) which spanned the entire daylight period. Shifts were randomly assigned to each survey day.

Surveyors conducted angler interviews at their survey sites to obtain the following information: where each angler was fishing, party size, duration of angling trip, how much longer they intend to fish, target species, gear used, total catch retained, total catch released. Further, if permitted by the angler, the surveyor inspected the catch to determine whether the angler's species identification was correct. If preferred by the angler, heads from chinook 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 head was retained by the surveyor. The angler was always given 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 is calculated using a combination of interview data, hourly rod counts conducted at the survey sites and overflight rod counts of the survey area (conducted twice per week: one weekend and one weekday overflight). Using total effort, HPUE and RPUE are expanded to determine catch and release numbers by species for the entire study area. Such analyses are documented in several Fisheries and Oceans Canada publications (Schubert 1992; Schubert 1995).

In both May and June, two surveyors were stationed at Island 22 in Chilliwack. Interviews were obtained from anglers who had finished fishing for the day. At the end of their shift, surveyors collected interviews from anglers still fishing (incomplete interviews) at Wellington and Grassy Bar. Hourly rod counts were conducted by boat between the Island 22 boat launch and Grassy Bar, inclusive (a total of 9 rod counts per shift). In July and August, one surveyor continued interviews at Island 22, while the other was stationed at Landstrom Bar in Hope. The surveyor at Landstrom carried out hourly rod counts. Incomplete interviews were obtained at the end of the Landstrom shift. In September, there were four surveyors on the river. Two at Island 22 as well as one at Landstrom performed rod counts. The Island 22 rod counts included from Island 22 downstream to (and including) Grassy Bar. The fourth surveyor was stationed at either Jones or Spring Bar.

For the purpose of analysis, data were blocked by day type (weekend and weekday). Interviews from anglers fishing systems other than the Fraser River were excluded from this analysis. Interviews from anglers only targeting sturgeon were also excluded from this analysis. For anglers alternating fishing effort between sturgeon and salmon, the time fishing for sturgeon as well as sturgeon catch were excluded from these interviews; only salmon fishing hours, salmon harvest and salmon release datum were included. Sturgeon released were not estimated due to different effort profiles required for sturgeon analysis (not assessed in this Fraser River creel program).

Data were 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, 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.

Results

Water Levels

In 2005, from May 1st to Sept. 7th, water levels (Environment Canada's Hope Hydrometric Station) were slightly lower, on average, than the monthly annual averages (1912-2004).

Table 1 - Fraser River water levels (at Hope) monthly averages (1912-2004). Environment Canada's Hope Hydrometric Station. Website - http://www.wsc.ec.gc.ca/hydat/H2O/index_e.cfm?cname=WEBfrmMeanReport_e.cfm

Fraser River (at Hope) Water Level (m) Monthly Averages, 1912-2004				
May	June	July	August	September
6.318	7.46	6.722	5.571	4.808

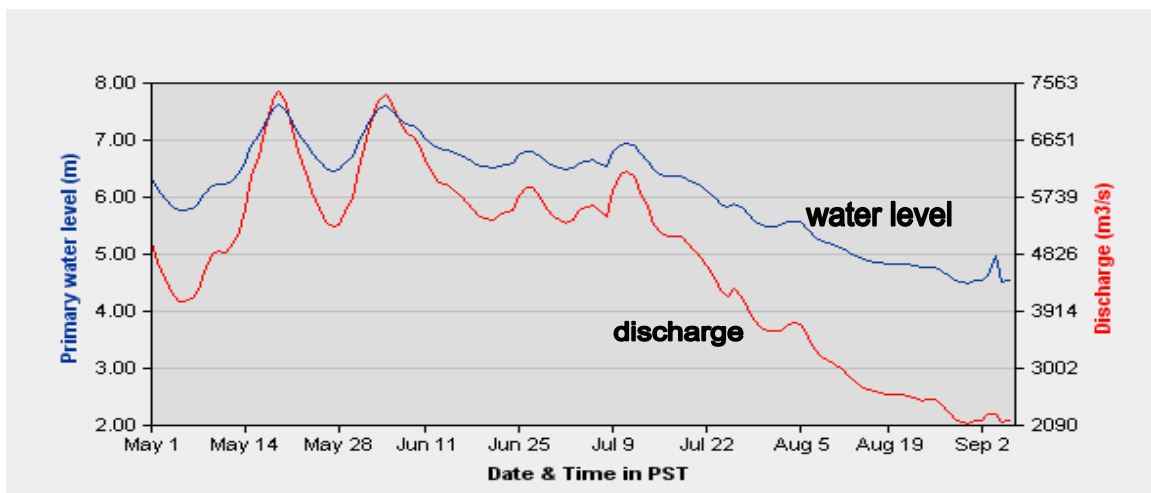


Figure 1 - Primary water level and discharge at the Hope Hydrometric Station, Environment Canada Results May 1 to Sept 7, 2005. Website: <http://scitech.pyr.ec.gc.ca/waterweb/formnav.asp?lang=0> (as accessed on September 28, 2005)

Catch Rate

The main target species on the Lower Fraser River from May 1st to August 31st, 2005, was chinook. From September 1st – 7th, it was sockeye. When permitted by the angler, all catch were inspected for proper species identification. During May 1st to August 31st (non-sockeye retention), 94% of harvests were inspected. Of those, 99.7% were correctly identified. During September 1st to 7th (sockeye retention) 89% of harvests were inspected. Of those, 99.8% were correctly identified.

Table 2 – Average harvest per unit effort (HPUE), by month, during May 1st through September 7th for the 2005 Lower Fraser River recreational fishery assessment.

HPUE	May	June	July	August	September
Chinook Adult	0.0082	0.0144	0.0307	0.0445	0.019
Chinook Jack	-	0.0002	-	0.00042	0.0009
Sockeye	-	-	0.0001	0.00004	0.322
Pink	-	-	-	0.0123	0.116
Chum	-	-	-	-	0.0003

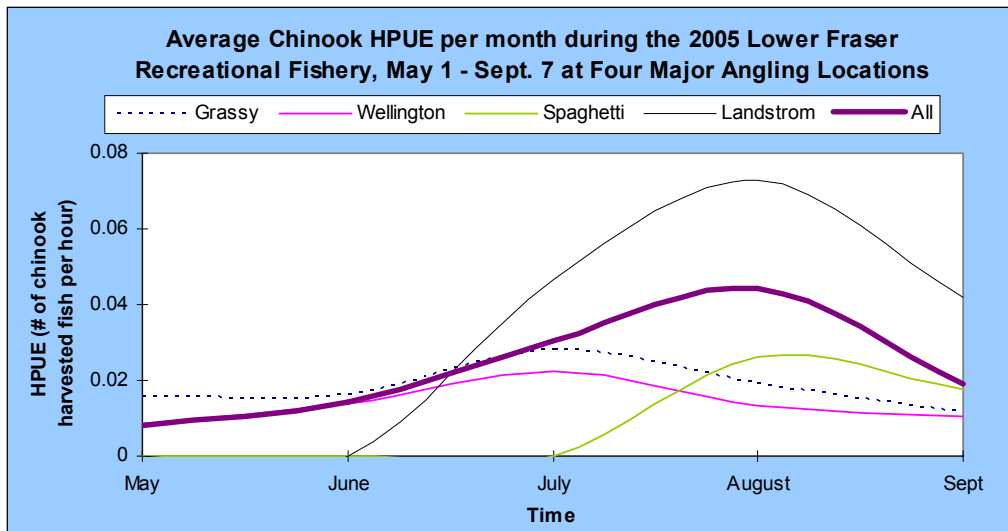


Figure 2 – Harvest per unit effort, **HPUE**, (fish retained per hour of effort) by month, for Chinook between May 1st and September 7th during the 2005 Lower Fraser Recreational Fishery, at four major angling locations. The average HPUE for the entire river is represented by the thickest line.

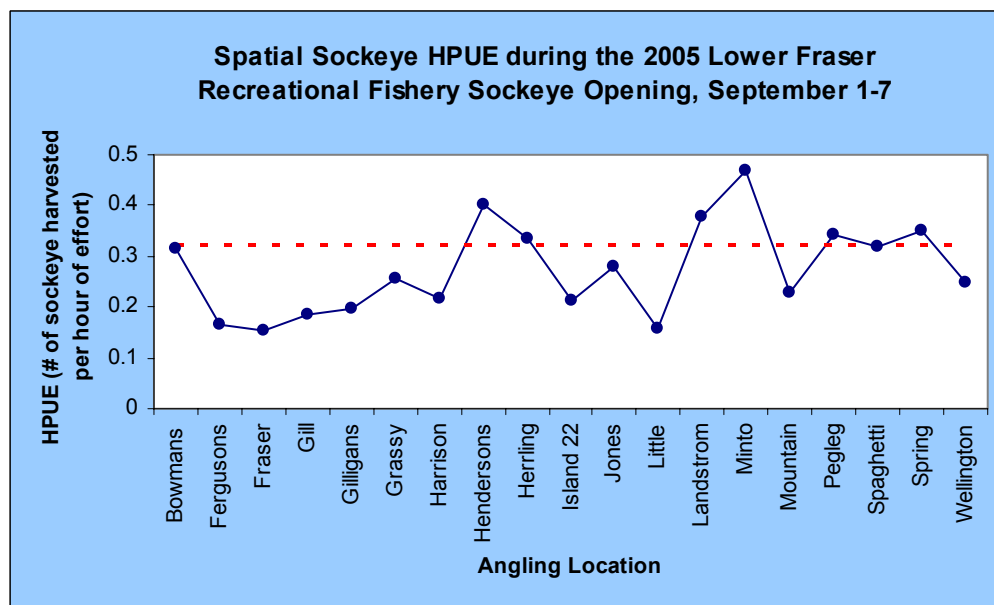


Figure 3 – Harvest per unit effort, **HPUE**, (fish retained per hour of effort) for Sockeye between September 1st to 7th during the 2005 Lower Fraser Recreational Fishery at each of the main angling locations. The average HPUE is represented by the dotted line.

Table 3 – Average release per unit effort, **RPUE**, (fish released per hour of effort) by month, during May 1st through September 7th for the 2005 Lower Fraser River recreational fishery assessment.

RPUE	May	June	July	August	September
Chinook Adult	-	0.0005	0.0006	0.001	0.0004
Chinook Jack	-	-	0.0001	0.0001	0.0008
Sockeye	-	-	0.0364	0.286	0.137
Pink	-	-	-	0.039	0.241
Chum	-	-	-	0.0003	0.0009

Angler Effort (spatial)

Angler effort in May and June was concentrated between the outlet of the Sumas River and the outlet of the Harrison River (60.4% of effort total May effort, 52.6% of total June effort). In July, effort increased in region 2 (47.4% of total effort). In August, effort dropped in region 2 (43.3% of total effort) and there was a substantial increase in effort at Minto Channel (41.3% of region 1 effort). There was a noticeable decrease in effort at Wellington Bar in August (3.4% of region 1 effort).

During the sockeye opening (Sept 1st -7th), the effort was spatially distributed similar to the second half of August. Region 1 had 61% of the total effort with 42.7% of that region's effort being at Minto Channel. Region 2 had 39% of the total effort. Of the region 2 effort, Spaghetti Bar had the highest effort (21.4%) with Landstrom, Jones and Spring Bar all having 10-12% of that regions effort. Table 4 and Figure 4 show the proportion of total effort for the entire study area's major angling locations.

Table 4 – Proportion of total (Region 1 & 2 combined) angler effort during May 1st to Sept 7th, 2005, for the Lower Fraser River's 7 most popular angling locations.

	May	June	July	August	Sept 1-7
Mouth of the Vedder	21.3%	10.3%	3.0%	0.4%	0.2%
Grassy Bar	17.6%	22.7%	17.8%	6.6%	5.6%
Wellington	12.0%	14.2%	9.4%	1.9%	2.2%
Minto Channel	0.0%	2.7%	1.0%	23.4%	26.1%
Spaghetti Bar	7.6%	6.5%	10.1%	14.2%	8.3%
Spring Bar	0.9%	7.9%	9.4%	6.0%	4.6%
Landstrom	4.1%	6.2%	8.2%	7.7%	4.9%

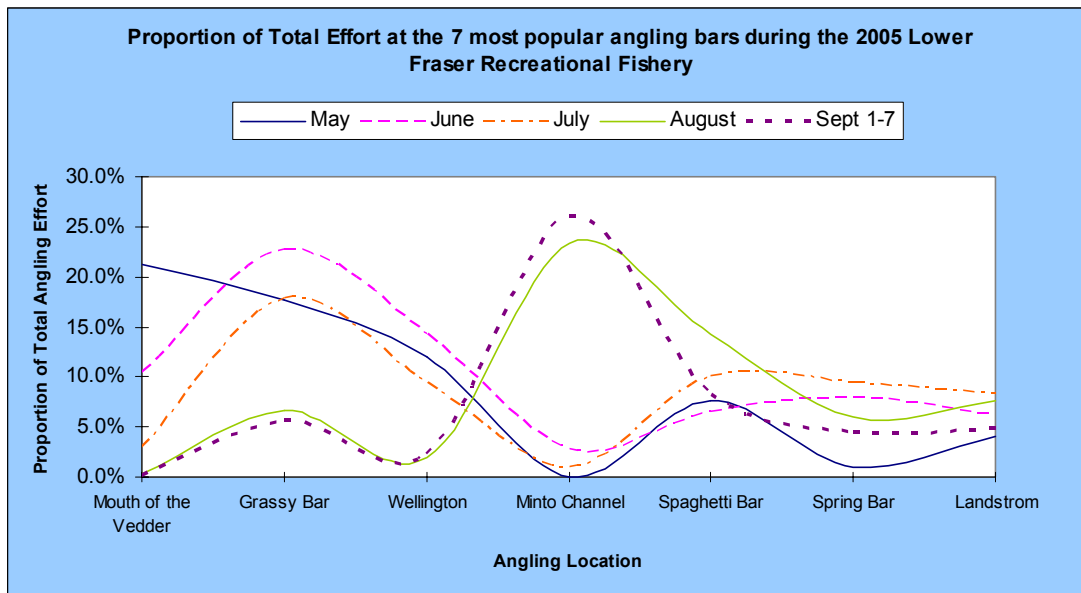


Figure 4 – Proportion of total (Region 1 & 2 combined) angler effort during May 1st to Sept 7th, 2005, for the Lower Fraser River's 7 most popular angling locations.

Angler Effort (temporal)

Effort Profile: Anglers fished throughout the daylight hours. The highest proportion of daily effort was between 6am and 12 pm.

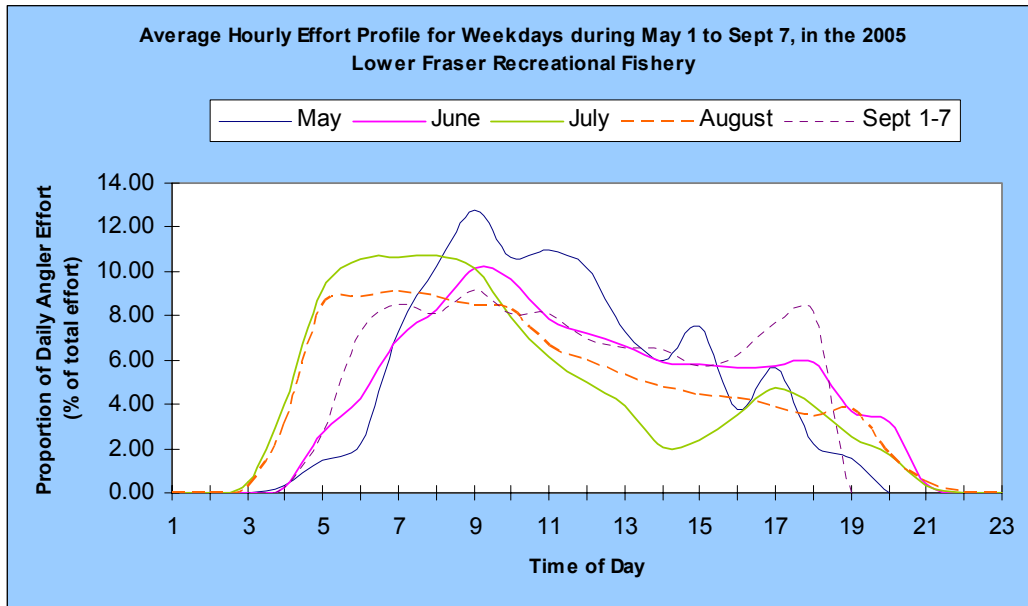


Figure 5 – Hourly angler effort profile for weekdays during May 1st to Sept 7th in the 2005 Lower Fraser Recreational Fishery.

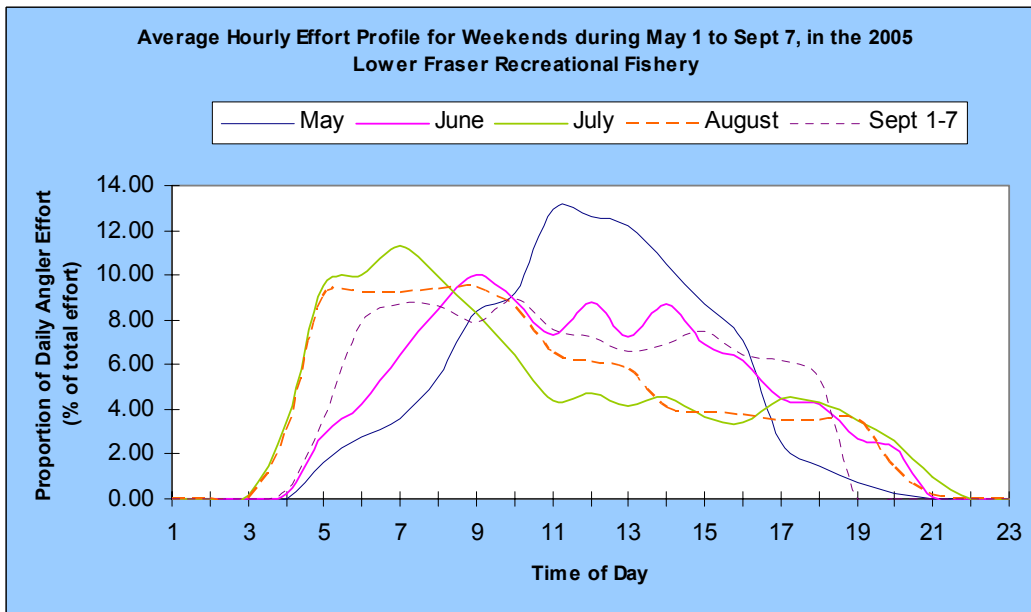


Figure 6 – Hourly angler effort profile for weekends during May 1st to Sept 7th in the 2005 Lower Fraser Recreational Fishery.

Acknowledgements

Technical oversight was provided by S. Kalyn and R. Tadey. Technical support was provided by G. Brown, D. Cline, K. Peters, L. Kalnin. Biological and technical support provided by S. Grant and R. Tadey.

Table 5 - Fraser River recreational fishery assessment final results from May 1 - 31, 2005. Data stratified into weekend and weekday

**FRASER RIVER MAINSTEM RECREATIONAL FISHERY ASSESSMENT
FINAL RESULTS
(STUDY PERIOD: May 1 - 31, 2005)**

SOURCE DATA	Weekend/Holiday	Weekday
Open Days in Study Period	10	21
Number of Survey Shifts	10	13
Number of Interviews	144	62
Interview Hours	663	263
Number of Instantaneous Effort Counts	5	4
Mean Rod Count (Instantaneous Effort)	74	23
Proportion of Effort in the Instantaneous Effort Count Time Block	0.088	0.117
Estimated Daily Effort (Hours)	841	197
Estimated Total Effort (Hours)	8328	4168

CATCH ESTIMATES	Weekend/Holiday		Weekday	
	Harvest	Release	Harvest	Release
CHINOOK ADULT	91	0	11	0
Marked (Adipose missing)	0	0	0	0
Unmarked (Adipose present)	91	0	11	0
CHINOOK JACK	0	0	0	0
Marked (Adipose missing)	0	0	0	0
Unmarked (Adipose present)	0	0	0	0
COHO ADULT	0	0	0	0
Marked (Adipose missing)	0	0	0	0
Unmarked (Adipose present)	0	0	0	0
COHO JACK	0	0	0	0
Marked (Adipose missing)	0	0	0	0
Unmarked (Adipose present)	0	0	0	0
SOCKEYE	0	0	0	0
PINK	0	0	0	0
CHUM	0	0	0	0

Table 6 - Fraser River recreational fishery assessment final results from **June 1 - 30, 2005**. Data stratified into weekend and weekday as well as time blocks (June 1-15 and June 16-30) for analysis.

FRASER RIVER MAINSTEM RECREATIONAL FISHERY ASSESSMENT
FINAL RESULTS
(STUDY PERIOD: June 1-30, 2005)

SOURCE DATA	Weekend/Holiday	Weekday
Open Days in Study Period	8	22
Number of Survey Shifts	8	12
Number of Interviews	285	342
Interview Hours	1,526.5	1,581.0
Number of Instantaneous Effort Counts	4	5
Mean Rod Count (Instantaneous Effort)	157	65
Proportion of Effort in the Instantaneous Effort Count Time Block	0.091	0.103
Estimated Daily Effort (Hours)	1,725	631
Estimated Total Effort (Hours)	13,574	14,545

CATCH ESTIMATES	Weekend/Holiday		Weekday	
	Harvest	Release	Harvest	Release
CHINOOK ADULT	220	11	186	0
Marked (Adipose missing)	0	0	0	0
Unmarked (Adipose present)	220	11	186	0
CHINOOK JACK	0	0	6	0
Marked (Adipose missing)	0	0	0	0
Unmarked (Adipose present)	0	0	6	0
COHO ADULT	0	0	0	0
Marked (Adipose missing)	0	0	0	0
Unmarked (Adipose present)	0	0	0	0
COHO JACK	0	0	0	0
Marked (Adipose missing)	0	0	0	0
Unmarked (Adipose present)	0	0	0	0
SOCKEYE	0	0	0	0
PINK	0	0	0	0
CHUM	0	0	0	0

Table 7 - Fraser River recreational fishery assessment final results from July 1 - 31, 2005. Data stratified into weekend and weekday as well as time blocks (July 1-15 and July 16-30) for analysis.

**FRASER RIVER MAINSTEM RECREATIONAL FISHERY ASSESSMENT
FINAL RESULTS
(STUDY PERIOD: July 1-31, 2005)**

SOURCE DATA	Weekend/Holiday	Weekday
Open Days in Study Period	11	20
Number of Survey Shifts	11	14
Number of Interviews	1,146	738
Interview Hours	6,123	3,690
Number of Instantaneous Effort Counts	5	4
Mean Rod Count (Instantaneous Effort)	352	191
Proportion of Effort in the Instantaneous Effort Count Time Block	0.081	0.091
Estimated Daily Effort (Hours)	4,346	2,099
Estimated Total Effort (Hours)	53,930	44,963

CATCH ESTIMATES	Weekend/Holiday		Weekday	
	Harvest	Release	Harvest	Release
CHINOOK ADULT	1,416	49	1,623	110
Marked (Adipose missing)	0	0	0	0
Unmarked (Adipose present)	1,416	49	1,623	110
CHINOOK JACK	0	6	0	0
Marked (Adipose missing)	0	0	0	0
Unmarked (Adipose present)	0	6	0	0
COHO ADULT	0	0	0	0
Marked (Adipose missing)	0	0	0	0
Unmarked (Adipose present)	0	0	0	0
COHO JACK	0	0	0	0
Marked (Adipose missing)	0	0	0	0
Unmarked (Adipose present)	0	0	0	0
SOCKEYE	11	1,920	0	1,681
PINK	0	0	0	0
CHUM	0	0	0	0

Table 8 - Fraser River recreational fishery assessment final results from August 1 - 31, 2005.
Data stratified into weekend and weekday as well as time blocks (August 1-15 and August 16-30) for analysis.

FRASER RIVER MAINSTEM RECREATIONAL FISHERY ASSESSMENT
FINAL RESULTS
(STUDY PERIOD: August 1-31, 2005)

SOURCE DATA	Weekend/Holiday	Weekday
Open Days in Study Period	9	22
Number of Survey Shifts	9	13
Number of Interviews	1,149	974
Interview Hours	6,195.5	5,276
Number of Instantaneous Effort Counts	4	5
Mean Rod Count (Instantaneous Effort)	676	375
Proportion of Effort in the Instantaneous Effort Count Time Block	0.091	0.084
Estimated Daily Effort (Hours)	7,429	4,464
Estimated Total Effort (Hours)	68,286	99,699

	Weekend/Holiday		Weekday	
	Harvest	Release	Harvest	Release
CHINOOK ADULT	2,341	52	5,136	123
Marked (Adipose missing)	0	0	0	0
Unmarked (Adipose present)	2,341	52	5,136	123
CHINOOK JACK	40	0	32	19
Marked (Adipose missing)	0	0	0	0
Unmarked (Adipose present)	40	0	32	19
COHO ADULT	0	0	0	0
Marked (Adipose missing)	0	0	0	0
Unmarked (Adipose present)	0	0	0	0
COHO JACK	0	0	0	0
Marked (Adipose missing)	0	0	0	0
Unmarked (Adipose present)	0	0	0	0
SOCKEYE	6	19,467	0	28,616
PINK	944	3,089	1,123	3,536
CHUM	0	31	0	16

Table 9 - Fraser River recreational fishery assessment final results from May 1 to August 31, 2005 (non-sockeye retention). Data stratified into weekend and weekday.

**FRASER RIVER MAINSTEM RECREATIONAL FISHERY ASSESSMENT
FINAL RESULTS
(STUDY PERIOD: May 1 - August 31, 2005)**

SOURCE DATA	Weekend/Holiday	Weekday
Open Days in Study Period	38	85
Number of Survey Shifts	38	52
Number of Interviews	2,724	2,116
Interview Hours	14,508	10,810
Number of Instantaneous Effort Counts	18	18
Mean Rod Count (Instantaneous Effort)	315	164
Mean Proportion of Effort in the Instantaneous Effort Count Time Block	0.08	0.10
Mean Estimated Daily Effort (Hours)	3,938	1,640
Mean Estimated Total Effort (Hours)	144,118	163,375

CATCH ESTIMATES	Weekend/Holiday		Weekday	
	Harvest	Release	Harvest	Release
CHINOOK ADULT	4,068	112	6,956	134
Marked (Adipose missing)	0	0	0	0
Unmarked (Adipose present)	4,068	112	6,956	134
CHINOOK JACK	40	6	38	19
Marked (Adipose missing)	0	0	0	0
Unmarked (Adipose present)	40	6	38	19
COHO ADULT	0	0	0	0
Marked (Adipose missing)	0	0	0	0
Unmarked (Adipose present)	0	0	0	0
COHO JACK	0	0	0	0
Marked (Adipose missing)	0	0	0	0
Unmarked (Adipose present)	0	0	0	0
SOCKEYE	17	21,387	0	30,297
PINK	944	3,089	1,123	3,536
CHUM	0	31	0	16

Table 10 - Fraser River recreational fishery assessment final results from Sept 1 - 7, 2005 (sockeye retention).

**FRASER RIVER MAINSTEM RECREATIONAL FISHERY ASSESSMENT
FINAL RESULTS
(STUDY PERIOD: September 1-7, 2005)**

SOURCE DATA	Weekend/Holiday	Weekday
Open Days in Study Period	3	4
Number of Survey Shifts	3	4
Number of Interviews	1,072	911
Interview Hours	5,062	3,883
Number of Instantaneous Effort Counts	1	2
Mean Rod Count (Instantaneous Effort)	2,231	1,287
Proportion of Effort in the Instantaneous Effort Count Time Block	0.086	0.089
Estimated Daily Effort (Hours)	25,941	14,460
Estimated Total Effort (Hours)	71,752	60,631

CATCH ESTIMATES	Weekend/Holiday		Weekday	
	Harvest	Release	Harvest	Release
CHINOOK ADULT	1,076	29	1,447	27
Marked (Adipose missing)	0	0	0	0
Unmarked (Adipose present)	1,076	29	1,447	27
CHINOOK JACK	63	39	61	61
Marked (Adipose missing)	0	0	0	0
Unmarked (Adipose present)	63	39	61	61
COHO ADULT	0	19	0	0
Marked (Adipose missing)	0	0	0	0
Unmarked (Adipose present)	0	19	0	0
COHO JACK	0	0	0	0
Marked (Adipose missing)	0	0	0	0
Unmarked (Adipose present)	0	0	0	0
SOCKEYE	22,953	6,780	19,659	11,350
PINK	8,639	15,005	6,683	16,981
CHUM	29	34	10	91

Table 11 - Fraser River recreational fishery assessment evaluation from May 1st, to September 7th, 2005. Total catch and release (weekend and weekday catch and release data combined).

	May 1-31	June 1-30	July 1-31	August 1-31	September 1-7	Total
Number of Interviews	206	627	1,884	2,123	1,983	6,823
Interview Hours	926	3,108	9,813	11,472	8,945	34,264
Number of Overflights	9	9	9	9	3	39
Average Overflight Count	51	106	280	509	1,601	509
ANGLER EFFORT						
Estimated Effort (hours)	12,496	28,119	98,893	167,985	132,383	439,876
ESTIMATED HARVEST						
Chinook Adult	102	406	3,039	7,477	2,522	13,546
Chinook Jack	0	6	0	48	124	178
Coho Adult	0	0	0	0	0	0
Coho Jack	0	0	0	0	0	0
Sockeye	0	0	11	6	42,612	42,629
Pink	0	0	0	2,067	15,323	17,390
Chum	0	0	0	0	39	39
ESTIMATED RELEASE						
Chinook Adult	0	11	159	175	56	401
Chinook Jack	0	0	6	19	100	125
Coho Adult	0	0	0	0	19	19
Coho Jack	0	0	0	0	0	0
Sockeye	0	0	3,601	48,083	18,130	69,814
Pink	0	0	0	6,626	31,896	38,522
Chum	0	0	0	47	125	172

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.

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