



HOUSE OF COMMONS
CANADA

Ensuring a Future for Fraser River Sockeye

An Action Plan for the 2005 Season

SUPPLEMENTARY REPORT

by

JOHN CUMMINS M.P.

DELTA RICHMOND EAST

**STANDING COMMITTEE ON FISHERIES AND OCEANS
REPORT INTO FRASER RIVER SOCKEYE 2004**

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I. INTRODUCTION

Post-season estimates prepared by the Pacific Salmon Commission show that 2,334,000 sockeye salmon passed the sonar recorders at Mission during the 2004 Fraser River sockeye migration. The catch upriver of Mission was 480,000 sockeye and the actual spawning estimate was 529,000 sockeye which leaves 1,325,000 sockeye unaccounted for.

These numbers are eerily similar to those presented to the House of Commons' Forestry and Fisheries Committee in 1993 by Drs. Pearce and Larkin who, on behalf of the then Fisheries Minister John Crosbie, conducted an investigation into the mismanagement of the 1992 Fraser River fishery.

Dr. Larkin told the committee, in 1992 "something like 1.5 million fish had gone by. The estimate of the catch was 382,000 fish. There were 789,000 fish recorded on the spawning grounds, which meant that 482,000 fish had gone missing. . . Where did the missing 482,000 go? Well, 201,000 were caught; 248,000 died en route and 33,000 were on the spawning grounds."

Dr. Larkin provided a substantive rationale for the adjusted numbers:

"There are some obvious potential explanations for this; it could be that the echo sounder at Mission doesn't count the fish properly and it had overestimated how many went by; it could be that more were caught than were recorded; it could have been that some of the

fish had died en route; and it could have been that some of the estimates of the numbers of fish on the spawning grounds were incorrect. We focused on trying to find out which of those four explanations accounted for the missing fish.

An intensive study of the counter suggested that the counts were correct, that it wasn't fish running back and forward or it wasn't a bias in the counter, so we exonerated the counter from any blame.

When it came to estimating the numbers caught, it was very difficult. There were roughly 1,000 nets in the river above Mission, 700 between Mission and Sawmill Creek, which is close to Yale, and roughly another 300 above. With that many nets in the river, it was very difficult to monitor the catch. The sales slip system was not working perfectly, in consequence of which, a number of fish were caught that were not recorded on sales slips. Almost certainly a fairly substantial number of fish were sold outside the province in Alberta or in the United States, or in Saskatchewan. They slipped away from the normal recording channels. Certainly, then, a greater number were caught than were recorded. I estimated that roughly 201,000 more fish were caught than were said to have been caught.

It was a very warm summer, temperatures in the river were very high, and in those circumstances many of the fish don't make it. At the same time, with so many nets in the river, many of the fish were caught in gillnets and dropped out dead or were exhausted and subsequently didn't make the spawning grounds. I estimated that this accounted for another 248,000 fish.

Finally, the estimates of the numbers of spawners on the spawning grounds were more or less correct. Just a few stragglers maybe accounted for the difference of about 33,000.”

The misreporting of catch and the increased in-river mortality identified by Pearce and Larkin stemmed from the Aboriginal Fishing Strategy (AFS) and the Pilot Sales program introduced by Fisheries Minister Crosbie in 1992. These programs were seen as a way of resolving an increasing poaching problem on the Fraser River by giving certain natives a bigger say in the management of the fishery and allowing them to sell their food fish.

Nothing came of the public outcry over the missing fish in 1992 and 1994. DFO paid short-lived attention to the reports it commissioned about the tragedies. Fraser River fishery management was marked by more fruitless negotiations, increased lawlessness and predictably, 1.3 million missing sockeye in 2004.

The Standing Committee report is useful because it provides long-term measures to assist in the management of the Fraser River fishery. This supplementary report takes into account information which became available after the Committee conducted its hearings. New information includes transcripts from the Williams hearings and the post-season review of the Mission sonar station by the Pacific Salmon Commission. This supplementary report presents an action plan

to protect the 2005 sockeye runs which will soon be making their way back to the Fraser. We must ensure the future of Fraser River sockeye.

II. SCOPE OF THE 2004 DISASTER

The post-season review of catches and escapement prepared by the Pacific Salmon Commission on February 5, 2005 concludes that 1,325,000 sockeye disappeared between Mission and the spawning grounds.

Gross Escapement past Mission	2,334,000
Catch Upstream of Mission	480,000
Actual Spawning Escapement	529,000
Missing Fish	1,325,000

The 1.3 million missing salmon represent an investment in the future by the aboriginal, commercial and recreational fishermen downriver from Mission and in the ocean. These fish were allowed to pass through their fisheries to provide spawning stocks to ensure that there would be commercial, recreational and aboriginal fisheries in 2008.

The true value of the missing 1.3 million spawners this year is their offspring, approximately 5.2 million sockeye in 2008. Setting aside 1.3 sockeye million for spawning purposes in 2008, some 3.9 million sockeye would have been available for harvest in 2008 if not for this disaster. At \$30 per fish this represents a direct loss of \$117 million to the BC fishing industry and a far greater loss to the BC economy when economic multiplier effects are considered.

III. PUBLIC COMMERCIAL FISHERY NOT A FACTOR

The Fraser Panel manages the U.S. and Canadian commercial fisheries on Fraser sockeye. It delivered an in-season estimate of 2.7 million sockeye to the bridge spanning the Fraser River at the city of Mission. For more than a century, the public commercial fishery has been prohibited from fishing upriver from the Mission Bridge. Clearly, it was not a factor in the disappearance of fish upriver from Mission.

The extreme precautionary manner in which the public commercial fishery is managed is demonstrated by the table below which shows how escapement at Mission in 2004 compares to previous years on this cycle.

Gross Escapement at Mission ¹	
1980	1,034,603
1984	1,287,671
1988	1,786,000
1992	2,036,000
1996	2,872,000
2000	3,167,000
2004	2,334,000

The 2004 run of 4.4 million is 15 percent larger than the 1988 run of 3.8 million, so an increase in fishing time for the public commercial fleet in comparison to 1988 could be justified on a run size basis alone. The facts are dramatically otherwise as demonstrated in the charts below:

¹ This table was compiled from the 1980, 1984, 1988, 1992, 1996 and 2000 reports titled in each year "Report of the Fraser River Panel to the Pacific Salmon Commission on the ____ Fraser River Sockeye Salmon Fishing Season, Pacific Salmon Commission and News Release #9, Pacific Salmon Commission, September 3/04, (p. 4)

- In July and August 1988, gillnetters fished almost 13,989 net days on Fraser sockeye. In the same two months in 2004, they fished 992 net days which is a decrease of 93%;
- In July and August 1988, trollers fished almost 24,515 boat days on Fraser sockeye, but in the same two months in 2004, they fished 1,944 days which represents a decrease in effort of 92 percent;
- In the seine fleet, during July and August 1988, seiners² fished almost 3,550 net days on Fraser sockeye, but only 125 net days in the same two months in 2004; a decrease in effort of 96 percent.

In contrast to the dramatic *reductions* in fishing effort by the public commercial fleet, the effort in the Fraser River aboriginal fishery *increased* dramatically:

- In July and August 1988, aboriginal fishermen below the Mission Bridge fished using drift gillnets for 147 net days, but in the same two months in 2004, they fished 1,230 net days, an 840 percent increase in effort;
- Above the Mission Bridge in the set net fishery, in 1988, during July and August, the aboriginal effort was 6,229 days. In 2004, the effort increased by 78 percent to 11,064 net days.

² The effort in the seine fleet was also reduced by a requirement to brail and sort fish which reduced their efficiency by a factor of about 50 percent.

Clearly, effort declined precipitously in the public commercial fishing fleet between 1988 and 2004 despite a small increase in run size. In marked contrast, the reported effort in the in-river aboriginal fishery *increased* dramatically.

The table below shows the percentage of the run harvested by the public commercial fleet. Since the 1992 disaster, the public fleet has harvested just 28 percent of the run on this cycle, compared to an average of 69 percent on the five cycles before 1992.

Fraser River Sockeye All-Canadian Commercial Harvests (2004 cycle)			
Year	Total Run	U.S. & Canada Public Commercial Fisheries (35% aboriginal in Canada)	Percent of Run Harvested by Public Commercial Fisheries
1972	3,708,000	2,743,000	74%
1976	4,341,000	3,284,000	76%
1980	3,133,000	2,069,000	66%
1984	5,919,000	4,572,000	77%
1988	3,744,000	1,917,000	51%
1992	6,493,000	4,220,000	65%
1996	4,523,000	1,248,000	28%
2000	5,217,000	1,448,000	28%
2004	4,383,000	1,249,500	29%

IV. POSSIBLE CAUSES OF THE 2004 DISASTER

As was noted in previous reports, such as the 1992 Pearse-Larkin report, after the fish reached Mission, there are four possible causes for missing Fraser River sockeye:

- a. Miscounting or inaccurate data provided by the Pacific Salmon Commission sonar station near the bridge over the Fraser River at Mission;
- b. Miscounting of the number of fish on the spawning grounds;
- c. Unreported legal or illegal harvests between the Mission Bridge and the spawning grounds;
- d. Fish mortality between Mission and the spawning grounds.

This report reviews each of these causes in the order above.

V. THE MISSION SONAR STATION

The Pacific Salmon Commission operates two types of sonar at Mission. The first is a single beam sonar station that has a 30 year track record of providing accurate estimates of sockeye passing Mission. The same staff person has been reading the data produced by this sonar for the last 27 years.

This sonar was carefully reviewed during the 1992 investigation by Pearse-Larkin who concluded:

“First, there were no significant mistakes, misallocations of stocks or unusual sources of bias in the data or analysis in 1992. Second, the estimates are subject to error (as all sampling estimates are) but it is unlikely that the error would exceed 10 percent in total. Third, the estimating technique is such that the probability of error leading to an over-estimate of salmon of the numbers passing Mission is no greater than the probability of

an under-estimate. This leaves little scope for attributing the missing fish to faulty counts of fish entering the river." (p. 22)

In his supplemental written analysis Dr. Larkin wrote:

"... some comfort may be gained from the results of such an analysis, because over the past fifteen years there has been at least an approximate degree of confirmation of the accuracy of the Mission counts. When the various stocks are aggregated, the overall discrepancy plus or minus over the 15 years was 7.7 percent." (p. 6)

And in his testimony before the Parliamentary Standing Committee on Fisheries and Oceans, Dr. Larkin stated:

"An intensive study of the counter suggested that the counts were correct, that it wasn't fish running back and forward or it wasn't a bias in the counter, so we exonerated the counter from any blame."

In 1994, a group of DFO, Pacific Salmon Commission and university scientists conducted a thorough analysis of all aspects of the Mission station operations as part of the Fraser investigation and concluded:

"The Report of the *Mission Hydroacoustic Facility Working Group* provides an assessment of the Pacific Salmon Commission's hydroacoustic facility for estimating salmon escapement at Mission . . . It concludes that although the potential biases raise some concerns, these are unlikely to lead to serious errors in escapement estimation. . . . We concur with the main conclusions and recommendations of the report. . ." (p. 85)

Following the Fraser review, a DFO and Pacific Salmon Commission team was formed to develop and test new technology to improve the data from the Mission counter. A new split-beam sonar station was tested resulting in the existing configuration which was first deployed in 2001. In 2004, the system was used for the first time to generate “real” time daily estimates of salmon passing the Mission station. The new split-beam system did not replace the single-beam sonar, rather the PSC operated both stations in tandem to ensure the best possible data.

A problem with the split-beam system developed early in the sockeye migration, but the problem was corrected in-season. The problem, it turned out, was not with the new technology, but in reading the sophisticated data it generated.

The PSC’s post-season review of the data generated by the counting station was consistent with tagging data and test fishery results. The new split-beam post-season estimates, the PSC concluded, are the best estimates of sockeye that passed Mission in 2004. The PSC also concluded that that the disappearance of 1.3 million spawners, was “due to factors that occurred upstream of Mission.”

The always cautious staff at the Pacific Salmon Commission is so confident in the precision of their revised estimates that they were able to advise the Williams

Committee in late February that the Mission estimates had a coefficient of variation of only 4 percent.”

VI. EN-ROUTE MORTALITY

En-route mortality can be attributed to natural causes such as disease, high water temperatures, extremes of water flows or obstructions such as landslides. Fishing-induced mortality relates to encounters with nets or hooks.

VII. EN-ROUTE MORTALITY FROM NATURAL CAUSES

Flow Conditions

With respect to flow conditions, the 2004 conditions mirror the conditions in 1992 when Pearse-Larkin concluded:

“In the Fraser itself, flows were low last summer, but no blockages were recorded and reduced flows are not likely to have caused any significant delay or stress to the salmon.”

(p. 23)

In 1994, the Fraser investigation concluded that “The high temperatures were mitigated to some extent by essentially normal river levels and flows.” (p. 23).

At the peak of the Early Stuart run in the Fraser Canyon, the Fraser Panel News Release of July 16, 2004 stated:

“The discharge level in the Fraser River (at Hope) is currently 3,550 cms [cubic meters per second], which is 37% lower than normal. Fraser River water temperature (at Qualark Creek) is presently 18.2 C. Although present conditions in the Fraser mainstem are generally satisfactory for sockeye migration, Fraser River water temperature is forecast to increase over the next several days which may cause physiological stress in migrating sockeye.”

As in 1992, flow conditions assisted sockeye migration. Instead of fighting river velocities of 3,865 cubic meters per second (cms), migrating sockeye in the mainstem on August 9th, for example, encountered flows of only 2,550 cms – a 34% reduction in velocity³. In effect, in 2004, it took 1/3 less effort for a sockeye to swim upstream in 2004 compared to a normal year.

Landslides and Other Natural Obstacles

The only landslide or natural obstruction on the Fraser River or its tributaries this year was a large landslide that completely blocked the Chilcotin River (an important tributary of the Fraser) near Farewell Canyon for approximately 14 hours on August 29th.

Fortunately, the impacts of the slide were not severe, as was noted by DFO stock assessment head Timber Whitehouse, because “80 percent of the total run would have been above Farewell at the time of the slide.”

³ Fraser Panel News Release, August 9, 2004

Water Temperature and Disease

Pearse-Larkin in 1992 and Fraser in 1994 dismissed high water temperatures as the principle cause of the missing salmon. In 2004, an examination of the same factors considered by Pearse-Larkin and Fraser leads to the same conclusion.

Carcass Counts

There was no indication of a fish kill of the scale that could account for 1.3 million missing sockeye. The vast majority of the evidence was in concurrence with the comments of Fishery Officer Supervisor Tom Grantham in the Lillooett office who stated:

“One observation worth noting that there was not the large schools of sockeye seen pooling along the Fraser as I noted in 1998 when we encountered similar environmental conditions.” (Feb 1, 2005, Williams Committee)

Brian Richman, a retired Fishery Officer Area and Chief for the Lower Fraser stated:

”In response to fish mortality because of temperature, there is no doubt that there is some death and mortality of salmon at 18.5 degrees Celsius. However, it’s used as a rule of thumb in an answer - - a pat answer as saying yes, you know, we’re missing all these fish because they died and they sunk. I find it is – an over-statement at minimum and an over-exaggeration . . . And regardless if sockeye sinks, one of the things that shows up in the canyon . . . when you have large mortalities showing up, they were on

the surface, on the edge, because the turbulence of the water brought them up.” (Jan 19/05, Williams Committee, p. 115)

Fishery Officer Derek Ray from DFO’s Chilliwack office stated:

”I can say that I've been a fishery officer in Chilliwack and worked in the area from the Mission Bridge to Hell's Gate for 16 years now. And I have seen years of -- I believe it was 1998 when there was high incident of pre-spawning mortality. And it was quite visible on the Fraser River that year. There were large numbers of fish, particularly sockeye, floating dead. But I didn't see any evidence of that in 2004.”

And Fishery Officer Doug Clift who is also from the Chilliwack office stated:

”Just to correlate it, there is always some pre-spawn mortality coming down the river. Every year you see it. But I don't think this year was abnormal.”

Pre-spawning Mortality

In 2004, however, there was a noted absence of pre-spawn mortality. According to Mr. Timber Whitehouse, DFO’s head of stock assessment for the BC interior where 90 percent of the Fraser sockeye spawn:

”In fact spawning success in almost all terminal areas was well above the long-term cycle average.” January 24, 2005 (p. 101)

“And what we did not see across the board throughout the watershed was much in the way of elevated pre-spawn mortality rates. In fact spawning success in almost all terminal areas was well above the long-term cycle average.” (p. 102)

Early Stuart Sockeye: Temperature Impacts or?

An estimated 129,000 Early Stuart sockeye passed the sonars at Mission. An estimated 75,000 were harvested in the aboriginal fishery but only 9,000 arrived on the spawning grounds. This leaves 45,000 sockeye unaccounted for.

On July 13, 2004 during the peak of the Early Stuart migration, the Pacific Salmon Commission reported that “The Fraser River water temperature at Hell’s Gate on July 11th was about 16.2 C, which is slightly above normal for this date.”

Extreme mortalities from high water temperatures cannot be expected when the water temperature is only “slightly above normal,” yet only 7 percent of the Early Stuart sockeye that passed Mission arrived on the spawning grounds.

Fishery Officer Supervisor Tom Grantham from DFO’s Lillooet office advised the Williams Committee that it was his observation that “that migrating conditions were excellent for Early Stuart sockeye.”

He also noted that aboriginal fishermen in the Lillooet area required long soak periods for gill nets to obtain fish, or extensive hours spent dipping to obtain fish.” This suggests that the Early Stuart run never made it above the Fraser Canyon.

Early Stuart sockeye that did make it to the spawning grounds had 10 times the average number of net marks, but enjoyed exceptional levels of spawning success suggesting; (a), nets used in the aboriginal fishery, rather than environmental factors, were responsible for the lowest number of spawners on the grounds in 30 years (there was no public commercial fishery on the Early Stuart run in 2004), and (b) water temperature was not a factor in the disappearance of the Early Stuart run.

No Correlation Between Spawning Ground Counts and Temperature

In his presentation to the Williams Committee, DFO stock assessment head Mr.

Timber Whitehouse advised that only 6 percent of the Early Stuart fish that passed Mission arrived on the spawning grounds; 19 percent of the Early Summers passing Mission made it as did 29 percent of the Summer run stocks.

If temperature was the primary factor in the disappearance of the fish, a greater percentage of the fish should have died as the temperature increased. It was suggested to Mr. Whitehouse that if the missing fish died from high water temperatures, the increasing percentage of fish that arrived on the spawning grounds as the temperature increased was the polar opposite of what should

have happened. Mr. Whitehouse replied, "I can't disagree with your general observation at all I would agree."

VIII. FISHING-INDUCED MORTALITY

Drop-out Rates

Set-nets positioned in the fast flowing waters of the Fraser Canyon are regularly left untended for long periods as the canyon offers little in the way of refuge for the fishermen. Fish go into rigor mortis after death and drop from untended nets to become another missing in transit statistic.

The problem of drop-outs was brought to DFO's attention in 1992, by Dr. Peter Larkin who stated:

"At the same time, with so many nets in the river, many of the fish were caught in gillnets and dropped out dead"

Larkin's conclusion was confirmed by Dr. Blair Holtby, a DFO employee seconded to the Pacific Resource Conservation Council, who appeared before the Fisheries Committee and stated that ". . . dropout from gillnets is a well-known problem."⁴

⁴ Dr. Blair Holtby, testimony, Parliamentary Standing Committee on Fisheries and Oceans, December 4, 2004

The potential scale of the problem was brought to the Fish Committee's attention by Mr. Robert Gould. Mr. Gould conducted a study of drop-out rates on the Stikine River in northern BC and concluded that:

"The principle works like this. If any of the net is set in a fast-current eddy, the one you're looking at on that chart, and it's not picked every two hours, by the 24th hour it will have lost, theoretically, according to this, five times as many fish as it lands."

Mr. Gould expressed his frustration that the drop-out rate problem had been brought to DFO's attention on numerous occasions in the past decade, yet DFO refuses to conduct the necessary studies to determine the actual drop-out rate on the Fraser River.

Fishing-induced Mortality from Net Encounters

Salmon migrating in the swift Fraser Canyon waters are forced to hug the canyon wall and dash from back eddy to back eddy as they fight their way upriver.

During an aboriginal fishery, set-nets create an almost impenetrable barrier to fish. The set-nets hang from the upriver end of each back eddy and are often made of monofilament creating an almost invisible barrier in the silt-laden water.

To bypass the nets, the fish must squeeze between the rock wall of the canyon and the upper end of the net or swim under it. Fish which choose to ignore the back-eddy and fight the current are often caught in the surging water and swept back downstream.

Sockeye have limited energy reserves because they do not eat once they enter fresh water. Repeated encounters with nets severely impairs their ability to reach the spawning grounds. In 1992 Pearse-Larkin stated:

“In addition to any temperature stress they may have encountered, these fish showed evidence of having been hampered by gillnets. When salmon pass through gillnets, some become entangled but subsequently escape. These fish show characteristic net-marks. The effort in fighting free of the nets also saps their energy. Experienced field personnel reported that Early Stuart spawners especially, arrived in conspicuously poor condition, with an unusually high incidence of net-marks indicating these fish encountered heavy gillnet fishing downstream.” (p. 24)

In his testimony before the Williams Committee, DFO official Timber Whitehouse, the head of stock assessment in the BC interior said:

“Net marks were one of the largest consistent remarks by survey crews throughout the watershed this year, all run timing groups. Net marks were prevalent.” (p. 107)

When asked to provide specific data, Mr. Whitehouse replied:

“We saw net marks -- and those are the three systems where we have direct hands-on handling of fish, where you can have a 100 percent confidence that where the mark was described as a net mark it was a net mark. At Chilko the incidence in 2004 was as you mentioned; it's just about 39 percent. At Kynoch the incidence is about 13 percent, and

at Tachie it was just over 60 percent. For comparison, the average net mark incidence between '95 and 2003 at Chilko was 14.8 percent, at Kynoch, which is the Early Stuart, 1.4 percent, and at Tachie River 19.5 percent.”

The unusually high incidence of net-marked fish on the spawning grounds in 2004 is convincing evidence of heavy gillnet fishing downstream from the spawning grounds. Given that the public commercial fishery on Fraser sockeye in 2004 was limited to 39 hours, the only explanation for the heavy percentage of net-marked fish is the authorized and unauthorized in-river aboriginal fishery.

A clear picture of the barrier created by set-nets in the Fraser Canyon comes from Ian Todd, the former head of the Pacific Salmon Commission from 1986 to 1999.⁵ During his testimony in the BC provincial court trial in *Regina v. Sonnenberg*⁶, Mr. Todd advised the Court that after the in-river aboriginal fishery was closed on August 17, 1992:

“I actually went to Hells Gate and on that day, our count of fish going by was something like ninety-two thousand which was the highest single day we’d seen all year. It was certainly larger than anything we’d seen all year. I think our maximum, up to that point, had been three or four thousand. . . . It’s a combination of removal and also, in our view, delays that were caused to the fish that weren’t caught. . . that sudden surge suggested to us that there was a double impact of the fishery - - one of very heavy removals and

⁵ Mr. Todd holds a Masters of Science in biology and worked at DFO from 1957 to 1978 and became the first head of the Pacific Salmon Commission a position which he held until retirement in 1999.

⁶ Proceedings at Trial in the Provincial Court of BC, *Regina v. Sonnenberg*, April 5, 2001

secondly, that just the number of nets in the river and the conditions in the river at the time contributed to - - to fish delay.”

The report of the Pacific Salmon Commission’s Fraser Panel into the 1992⁷ fishery provides further details on what happened after the in-river aboriginal fishery was closed:

“Comparison of the estimated passage at Mission and spawning escapements showed that Early Stuart and early summer-run sockeye were intensively exploited in Indian fisheries. Arrivals on the spawning grounds averaged 24% of the numbers estimated to have passed Mission.

“Indian fishery impacts on summer-run stock migrating past Mission prior to August 17 were high as well... removal rates were close to zero for fish migrating after that date as these fish were protected by the closure of the mainstem Fraser River commercial and Indian fisheries... Arrival of Chilko sockeye at a counting site below Chilko Lake showed that nearly 100% of Chilko fish that migrated past Mission after August 16th arrived at the site compared to 21% of fish that migrated past Mission from August 2-8 and 52% of fish that migrated from August 9-15 (this latter group was partially protected by upstream closures).”

In 2000, BC fishery scientists also noted the dramatic impact of aboriginal set-nets in the Fraser Canyon:

⁷ *Report of the Fraser River Panel to the Pacific Salmon Commission on the 1992 Fraser River Sockeye Salmon Fishing Season*, Pacific Salmon Commission, 1996,(p. 28)

“ . . . While the nets were in the water, fish passage was concentrated towards the river bottom and at an increased range (from shore). Passage numbers dropped dramatically from an average of 1,000 fish/hr to less than 200 fish/hr at the onset of the fishery. Once the fishery closed, passage moved back towards the shore and became spread throughout all aims. The second [aboriginal set-net] opening, on August 5-8 1998, caused a similar response. Fish passage dropped from a high of 8,000 fish/hr to less than 1000 fish/hr immediately following the onset of the fishery. ”⁸

The variation in daily estimates of fish passing Hell’s Gate in 2004 also highlights the blockage effect of the set-net fishery. In 2004, the intensive aboriginal fishery between Mission and Sawmill Creek was closed on August 15th. In the next four days, 80,200 sockeye were recorded going by the counter at Hell’s Gate. In the previous 10 days, only 52,800 sockeye were recorded passing Hell’s Gate.

The daily count of 20,050 per day after the closure of the aboriginal fishery compared to a daily count of 5,280 when the aboriginal fishery was open is highly indicative of the blockage effect of the aboriginal fishery.⁹

Summary of Natural and Fishing-induced Mortality

In 1992, Pearse Larkin stated:

“Our conclusion from all this evidence is that mortality among sockeye before they reached their spawning grounds was somewhat higher than normal and in the order of 20 per cent of the Early Stuart stocks that entered the river, 10 per cent of the Early

⁸ *The Influence of Extreme Water Temperatures on Migrating Fraser River Sockeye Salmon During the 1998 Spawning Season.* J.S. MacDonald et. al., DFO, 2000, (p. 19).

⁹ These numbers do not represent the total number of fish passing Hells Gate.

Summers, and seven per cent for the Summer stocks – a weighted average of about 10 percent.” (p. 24)

In 1994, the Fraser Committee rejected a 15% mortality rate:

“The estimate of 15 percent mortality proposed by the working group is merely an educated guess, largely based on an extrapolation from Dr. Peter Larkin’s 1992 mortality estimate of 10 percent. Larkin’s estimate, perhaps adequate at the time, should not be the foundation for subsequent estimates. Furthermore, the working group estimate is likely overstated in that it fails to adjust for fish caught in the river above Mission.”

Mindful of Fraser’s rejection of a 15 percent in-river mortality rate, if applied, it would only account for 200,000 of the 1,325,000 missing sockeye leaving 1,125,000 unaccounted for.

IX. UNREPORTED CATCH IN THE IN-RIVER ABORIGINAL FISHERY

Unreported aboriginal catches are, yet again, a key factor in the 2004 disaster given the highly aggressive aboriginal fishery up-river from Mission and demonstrated ability of aboriginal fishermen to move vast quantities of fish without reporting the harvest to DFO.

The DFO Authorized Aboriginal Fishery

A comparison of the aboriginal fishery in 1988 (the same cycle as 2004) with the aboriginal fishery this past season highlights the deadly increase in effort in the in-river aboriginal fishery. In July 1988, for example, the set-net effort in the aboriginal fishery between Mission and North Bend totaled 1,744 days. In 2004, effort increased to 5,461 net days. The in-river aboriginal fishing effort increased by more than 300 percent between 1988 and 2004.

Impact of DFO Authorized Aboriginal Fisheries on the Early Stuart Run

The impact of increased fishing effort is clearly evident in a comparison of the effort targeted on the 1988 and 2004 Early Stuart migration from Mission to Sawmill Creek. In 1988, the Early Stuart run was 195,000 sockeye - statistically identical in size to the 191,000 in-season estimation of the 2004 run.

July is the key month for Early Stuart sockeye migration through the Fraser Canyon on their way to their spawning grounds northwest of Prince George. Despite a much smaller and less aggressive aboriginal fishery in 1988 compared to 2004, DFO closed the fishery from July 6th to July 29, except for a single day, to protect the Early Stuart run.

In 2004, the department did the exact opposite. They opened an aboriginal fishery above Mission every day throughout July. DFO's senior official in BC is demonstrative of DFO's callous attitude towards its duty to protect the fishery:

Mr. John Cummins: And that's the problem. There were very important cultural fisheries in 1987 and 1988. Nothing has changed. But to protect the resource--as the Supreme Court of Canada said in Sparrow, first is conservation, and second is native food, social, and ceremonial--they shut the fishery in 1987. They shut it in 1988. And you folks didn't do it in 2004. That's the issue, isn't it, Mr. Sprout?

Mr. Paul Sprout: Again, I thought the discussion today was on the 2004 fishery. I appreciate that an honourable member has raised a fishery that occurred 14 years ago. We will do our best to provide further information to elaborate on the response we've made so far.

To date, the Fisheries Committee has received no information from the department to explain its decision to authorize the decimation of the 2004 Early Stuart sockeye run.

Only 9,000 Early Stuart sockeye arrived on the spawning grounds this year, just 7% of the 129,000 that passed the Mission counter. It is the lowest escapement on this cycle in three decades, a startling fact which does not seem to be of any concern to the senior DFO official in BC.

Unreported Catches in the Aboriginal Fishery

In virtually every fishery in the world, some fishermen will fail to accurately report their catches. The in-river aboriginal fishery on the Fraser River is noted for the scale of its unreported catches. This problem was recognized by Fisheries Minister John Crosbie before the Forestry and Fisheries Committee in May of 1993 when he speculated that legalizing the sale of food fish would end the problem:

“ . . . with respect to the sale of fish, we are not saying that we have to do this because of Sparrow. We are doing this because we think it’s the best public policy because we know that for years . . . The Aboriginals have been taking the fish and selling the fish in great quantities. It’s an experiment to see whether this is a better way to do it . . . That’s why we’re trying these experiments.” (emphasis added)

In their 1992 report, Pearse-Larkin noted:

“Some argue that hundreds of thousands of excess fish could not have been handled and disposed of without attracting attention. The evidence leaves little room for concern on this point, however. In 1990, when only half as much gear was used, the reported catch on the lower river was almost double the estimated catch in 1992. Most of it is believed to have been sold.¹⁰

The 1994 John Fraser investigation made similar findings:

¹⁰ Managing Salmon in the Fraser, Report to the Minister of Fisheries and Oceans on the Fraser River Salmon Investigation, Peter Pearse, Peter Larkin, December 1992, (p. 27)

“Given information from numerous interveners, we agree with the In-river Catch Estimation Working Group that the reliability of reported catch estimates cannot be verified. Furthermore, because of reductions in DFO enforcement staff, there simply are not enough officers in place to estimate the magnitude of the illegal catch.” (p. 21)

It has been argued that the aboriginal fishery could never harvest, let alone sell 1.1 million sockeye, but as noted by Pearse-Larkin above, the aboriginal fishery caught and sold illegally some 890,000 sockeye in 1990. In 2004, it is unrealistic to assume that in-river aboriginal fishermen cannot catch, transport and sell some 200,000 sockeye more than their 1990 harvest of 890,000.

In 2004, the fishing effort in the lower Fraser aboriginal fishery was more than double the 1990 effort. In 2004, aboriginal fishermen enjoyed legal access to fish processing plants (including two new fish plants on Lower Fraser aboriginal reserves) and access to commercial freezing operations. Trucking companies were legally permitted to run refrigerated containers with carrying capacities of 40,000 pounds to locations near the riverbank to assist in the transport of fish.

Aboriginal fishermen also had access to unscrupulous fish brokers and a legal ability to transport fish in semi-trailers across the Canada/US border as well as into Alberta. A hands-off enforcement policy in certain areas of the river also facilitated the harvest, transport and processing of unreported harvests.

In 1992, Pearse-Larkin concluded that aboriginal catches were “significantly higher than the Department’s estimates.” The reasons include a reliance on hails, the common practice of fishing with multiple nets and unauthorized nets used at night or nets fished before openings or after closures (p. 26).

The unreliability of hailed catches results in DFO continuously under-estimating the aboriginal catch.¹¹ Pearse-Larkin wrote in 1992:

“ . . . increased reliance was put on “hailing” – asking fishermen about their catches. However, hail information is notoriously unreliable. Checks on the Lower River last year revealed that actual catches were usually more than double the catches hailed.” (p. 26) (emphasis added)

In 1999, Fishery Officer Supervisor Herb Redekopp directed an audit of the Musqueam Indian Band fishery and concluded¹²:

“Furthermore, today’s audit confirms investigative data from previous weeks which indicates a discrepancy of around 300% overall . . . The catch data provided to DFO by the Musqueam fishers is poor at best and should not be used to make fisheries management decisions.”

A 2000 report on illegal aboriginal fishing on the Fraser prepared for DFO by ESSA Technologies stated:¹³

¹¹ In the hail or interview process fishermen simply tell the aboriginal or DFO monitor how many fish they catch. No or little attempt is made to verify the catch.

¹² Memo from Herb Redekopp to Paul Ryall, Bert Ionson and others dated June 30, 1999, Subject: Audit of Area 1 Native Catch Data

“Also, this report does not address potential unsanctioned fishing activity occurring during dry-rack fisheries in the last three weeks of July 2000 [where] Fishery Officers reported observing individuals taking fish out of the area, especially at night, without reporting their catches in the voluntary hail system operated by local First Nation Bands.”

Despite the well-documented failure of the hailing system for recording catches, in February 2005, Mr Bert lonson, DFO’s salmon coordinator for the Pacific Region, stated that the best way to improve catch monitoring in the in-river aboriginal fishery is to “put more people out on the water to actually undertake hails . . . “

Clearly, senior officials in the department do not want to admit the failure of the systems they rely upon to manage the in-river aboriginal fishery.

The testimony referenced by Provincial Court of BC Judge Jardine in his 2004 judgment in *Regina v. Douglas et. al* is startling. .:

“On the evidence of Mr. Quipp, Mr. Wood and Mr. Victor, no one actually counts how many fish the Cheam catch. Mr. Quipp estimated his catch with Mr. Wood, his partner, to be conservatively 10,000 or more Sockeye, as well as more than 1,000 Chinook. If he is correct and there are 60 such fishers, the Cheam take a large number of fish. This would constitute an estimate in the hundreds of thousands. Mr. Quipp was candid when he said

¹³ ESSA Technologies, Unsanctioned, Partially Monitored First Nations Fisheries on the Lower Fraser River: A Conservation Risk, 2000

that of the fish he caught, he first satisfied his need, and then he sold approximately 90 percent of the remainder.” (para. 51)

These 10,000 sockeye and 1,000 chinook were caught in one 60 foot set-net anchored to the bank of the river. There are more than 500 of these set-nets in the Fraser River during the peak of the sockeye run.

Brian Richman, a Fishery Officer and Associate Area Chief of Enforcement on the Lower Fraser who retired from DFO last November after 29 years with the department commented on the in-river aboriginal fishermen’s ability to transport fish¹⁴:

“ . . . I talked to a senior person in customs on the border. And he told me that customs, for some unknown reason, had decided to identify -- more than 1,500 pounds of fish going across the border would be identified by customs as a commercial load, even though it wasn't a commercial load, even though it was claimed to be a personal -- for personal use. And he told me that 100 vehicles a day were going across the border with more than 1,500 pounds of fish.”

The extent of the harvest and illegal sales of salmon as described in Judge Jardine’s court and in the testimony given by retired Fishery Officer Brian Richman shocked long time observers of the in-river aboriginal fishery. If one net can catch 10,000 sockeye and there are more than 500 nets fishing, it is absurd

¹⁴ Mr. Brian Richman, testimony , Williams review, January 19, 2005

to conclude that the remaining 499 nets caught less than 600 fish each as DFO contends in their published catch estimates.

With fewer Fishery Officers in place in 2004 than in 1994 and the increasing defiance of fisheries regulations by the Cheam and certain other aboriginal groups it is reasonable to assume that matters were worse in 2004 than in 1994.

As John Fraser said in his 1994 report, “evidence will not be found if no resources are assigned to search for it.”

X. ENFORCEMENT: THE ONGOING CRISIS

Providing sufficient resources to the Conservation and Protection Branch of Fisheries and Oceans Canada is essential if Canada is to fulfill its duty to British Columbia under BC’s Terms of Union which required the federal government to protect and encourage the BC fishery¹⁵. Despite this constitutional obligation, the federal government has willfully undermined DFO’s Conservation and Protection Branch by imposing severe budget cuts, by failing to provide a effective regulatory regime to manage the aboriginal fishery and by a systemic lack of commitment to the enforcement function of the department.

¹⁵ Term 5e

The evidence presented to the Fisheries Committee by senior DFO officials about the department's enforcement capabilities is in marked contrast to the evidence presented by Fishery Officers to the Williams review.

Robert Melvin, a Fisheries Officer with the department's Special Investigations Unit stated (Feb 1/05):

- The illegal sale of aboriginal caught fish drives the entire closed time fishery. His office had made a number of recommendations to deal with illegal sales, but no action had been taken to implement the recommendations.
- When confronted with an aggressive approach by aboriginal fishermen in the Lower Fraser, the department has always backed off rather than enforce the closed time regulations.

Douglas Cowen, a Fisheries Officer Supervisor in the city of Salmon Arm in BC interior stated:

- Reduced staffing levels coupled with budget and overtime restrictions has "crippled" C&P operations in his field unit.
- The majority of black market fish from the BC interior is sold in the Okanagan area and in 2002 this was identified as a priority for our office, but "we haven't done any black market work since 2002."
- "Our patrols are limited to core hours and a maximum distance of 3 hours from our office. This effectively precludes any patrols in much of the area the office is supposed to cover."

- “Several years ago we lost the authority to participate in road blocks, yet the Trans Canada highway runs directly through my detachment area and is a major conduit of fish products going to the Prairies.”
- “In order to do our job it takes more than money, it takes the proper legislation and the political will.”

Tom Grantham, a Fisheries Officer Supervisor in Lillooet which is just upriver from the Fraser Canyon stated:

- “Our approximate patrol area is 12,000 square miles.... We have four field officers and one detachment supervisor.”
- “We don’t have a helicopter budget anymore. We used to have a fairly substantial budget. Due to the distance for the Lillooet office and the distance to the fishing sites patrols are limited because of overtime restrictions.”
- Illegal sales are not addressed due to budget constraints.

Stu Cartwright, a Fisheries Officer advised:

- In the years gone by we have had directions long before 2004 not to enforce the law against natives.

Brian Richman, a retired Conservation & Protection Area Chief for the Lower Fraser stated:

- “I asked the customs officer to provide me with details of the fish crossing the border and he said no because we’re not considered an enforcement agency.”

- “In 2001 or 2002 I was given the task of developing a strategy to deal with illegal sales. It was a three year job when I was assigned. Within two days of starting the assignment I was told it was only 60 percent of my job. Within a year I was told it was less than 50 percent . . . then after a year and a half came by, I was told to drop the whole thing.”
- “As a matter of a fact, for over a year, the officers were not in Cheam territory in an enforcement capacity other than just passing by . . . “

Derek Ray, a Fishery Officer from the Chilliwack detachment stated:

- “There was 168 reports of illegal fishing in and around the Agassiz Bridge, and in the first part of 2003 and the last part of 2004 our enforcement program didn’t include conducting enforcement.”
- “In 2000, the department entered into protocols. And we were instructed at the time to have no enforcement contact with members of the Cheam First Nation. We were to conduct opportunistic enforcement. And the protocols became ever, ever restricting in our in our work because of the interpretation of the protocols. They continued into 2001 and 2002 really hampering our ability to conduct enforcement operations. At the same time it antagonized other members on the river to conduct illegal fishing because they weren’t being treated in the same fashion. We simply got overwhelmed by the number of violations.”

Scott Laverty, a Fishery Officer from the Mission detachment stated:

- “Again, it’s not a food, social and ceremonial fishery, it’s a large extensive commercial fishery that takes place. Such to the extent that the weekend fishery goes, whether it be targeting on springs or sockeye, the food, social and ceremony through explosion of a number of ceremonial licences during the closed time. You get your two week fishery taking place and then the food, social and ceremonial fishery takes place during the

closed time.”

- “I don’t have any confidence -- anybody in this room from my perspective could during the open time throw 100 set-nets in the Fraser and fish and put some – some number on it, and I wouldn’t know the difference.”
- “Call the fishery what it is and regulate it as such. Otherwise we just spin down the same road. Like I don’t really expect anything to happen here, right. You give a couple more fish cops, nothing will change. I’ve been through this before, and nothing ever changes, right. You have to sit down and seriously start thinking about what you want to do with the fishery and manage it accordingly.”

Perry Powers, a Fishery Officer from the Chilliwack detachment stated:

- “We would at least need a commitment by our own management to support the enforcement actions that we take. Up until now most of the time we don’t. We don’t have that support.”

Doug Clift, a Fishery Officer supervisor from the Mission detachment stated:

- “In regards to the budget, we were cut back in 2001 . . . I think it was approximately 50 percent. . . . There’s a small graph here. And I think it’s part of Ottawa’s. With less enforcement, less resources, you’re not out there finding violations, therefore the violation [rate] drops. Therefore, if there’s not so many violations, obviously you have more compliance. . . .”

These comments by concerned Fishery Officers are nothing new. In 1992

Pearse-Larkin stated at p. 18:

- “Fishery Officers had been instructed not to lay charges while delicate negotiations about fishing agreements were ongoing.”
- “Requests by field officers for policy direction went unanswered. As violations became conspicuous in certain areas, local Fishery Officers were flooded with complaints and

accusations of having failed to do their jobs. As their hands were tied, this criticism took a heavy toll on morale and pride.”

- “Upriver, beyond the Agreement area, surveillance and enforcement was abandoned altogether. Faced with cuts in staff and instructions not to lay charges, the Department’s field staff threw up their hands.”
- “Major enforcement problems developed. Formerly rare illegal practices such as drift gillnet fishing were observed.”

In 1994, the Fraser Report found that the enforcement capabilities of the department had further deteriorated (pp. 58-60):

- “In 1994, a culmination of long-term budget decline, organizational change, increasing enforcement demands and low morale led to an unfortunate breakdown in DFO enforcement capacity.”
- “Large areas of the coast and interior were left without effective protection, creating low-risk opportunities for poachers . . .
- “The level of enforcement and capacity was grossly inadequate in 1994 . . . If permitted to continue, the attitudinal anarchy reflected in many user groups during 1994 will sooner or later destroy the fishery.”

All senior department officials who testified before the Fisheries Committee or the Williams review complained that a lack of funds was preventing the department from undertaking the enforcement activities necessary to protect the resource in 2004.

Despite the claims of a lack of funds, documents released under the *Access to Information Act* state the Pacific Region of DFO spent \$7.1 million in travel expenditures in the year ended on March 31, 2004. Another \$159,000 was spent on “hospitality”, \$140,000 on the department’s public relations and the office of the Regional Director General spent \$1.6 million.

In 1994, the Fraser report concluded that the lack of funds for enforcement did not reflect an actual lack of funds, but misplaced priorities within the department. It has been a decade since the Fraser report, but the misplaced priorities are still with the department.

XI. FINDINGS

The Fraser Panel provided competent management of the public commercial and recreational fisheries in 2004 as evidenced by the 2.3 million sockeye which passed the sonars at Mission. The 2.3 million was sufficient to satisfy aboriginal food, social and ceremonial fisheries and spawning requirements. All that was needed was competent management and adequate enforcement by the Department of Fisheries and Oceans.

In 2004, the sonars at Mission provided accurate fish passage estimates within reasonable margins of error.

DFO's estimates of in-river catches, especially between Mission and Sawmill Creek, were inaccurate. Considerably more fish was removed from the river than was accounted for in DFO's published estimates.

Unreported legal and illegal catches in the aboriginal fishery are a primary cause of the missing fish in 2004.

DFO sanctioned fisheries between Mission and Sawmill Creek were excessive and showed a complete disregard for spawning requirements.

DFO authorized openings for food, social and ceremonial purposes were far in excess of the requirements needed those purposes.

There is no substantive evidence to conclude that high water temperatures were the primary cause of the loss of the migrating sockeye.

Even though spawning ground counts of salmon are inadequate for the proper management of the fishery, there is no evidence that miscounting on the spawning grounds accounted for a significant number of missing fish. The inadequate counting system may just as easily have over-estimated the numbers of fish on the spawning grounds.

Encounters with in-river aboriginal nets likely caused significant en-route mortality.

XII. SUPPLEMENTARY REPORT RECOMMENDATIONS

Introduction

The purpose of these recommendations is to ensure the survival and enhancement of Fraser River sockeye. Implementation will ensure the adequate management of the 2005 Fraser River fishery and allow time for more comprehensive restructuring of Fisheries and Oceans Canada.

Fishery Management

1. All fisheries on Fraser River salmon in Canadian and US waters must come under the management authority of the Fraser River Panel. This includes the opening and closing of all aboriginal fisheries.
2. All set-net and drift-net fisheries in the Fraser Canyon and in other fast flowing waters upriver from Hope must be prohibited. Dip net fisheries should be encouraged and accommodated.
3. All net fisheries upriver from the Mission Bridge to Sawmill Creek must be prohibited during night time hours.

4. All commercial fishing must be prohibited above the Mission Bridge.
5. All drift-net fishing must be prohibited above the Mission Bridge.

Structure of the Conservation and Protection Branch

6. The Conservation and Protection Branch of the department should be a stand-alone agency within the Department of Fisheries and Oceans separate from Fisheries Management. The national head of Conservation and Protection should report directly to the Deputy Minister.
7. The Conservation and Protection Branch of the Department of Fisheries and Oceans should receive Police Agency Designation.

Resources and Funding for the Conservation and Protection Branch

8. A permanent staff of 75 full-time Fishery Officers must be dedicated to protecting the salmon fishery on the Lower Fraser River.
9. The Lower Fraser Conservation and Protection effort must be adequately funded to regain control of the fishery. An additional \$2.5 million dollars per annum must be provided to fund Fishery Officer overtime, vessel and automobile expenses, helicopter patrols and other directly related costs.

10. The Department of Fisheries and Oceans must report to the Standing Committee on Fisheries and Oceans on an annual basis on the progress made in dealing with the issues and problems raised concerning the Fraser River salmon fishery and that report should also be tabled in Parliament. The report should pay particular attention to the work undertaken by the Conservation and Protection Branch in protecting migrating Fraser River salmon stocks and ensuring the *Fisheries Act* and its regulations are enforced.

Regulatory Support for the Enforcement Function

11. Regulations under the *Fisheries Act* should be enacted prior to the start of the 2005 salmon fishery to ensure that:

- a. All salmon harvested under a Food, Social and Ceremonial license be clearly identified upon capture. This could be accomplished by the previous practice of cutting off the nose and dorsal fin of the fish immediately upon capture;
- b. All salmon harvested under a Food, Social and Ceremonial license be clearly identified as such throughout any processing or packaging operation and separated from fish caught under a commercial license;

- c. Commercial cold storage or processing facilities notify the Conservation and Protection Branch of any entry or exit of commercial quantities of fish;
- d. Inter-provincial and international transport of fish caught under a Food, Social and Ceremonial license is prohibited;
- e. Non-native possession of fish caught under a Food, Social and Ceremonial license is prohibited;
- f. Fishery Officers have the authority to search for fish in transit.



John Cummins, M.P.
Delta-Richmond East