Surveillance Report
British Columbia Commercial Sockeye Salmon Fisheries

Certificate Nos.:
MML-F-066 Barkley Sound
MML-F-067 Nass
MML-F-068 Skeena
MML-F-069 Fraser

Intertek Moody Marine

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1.0 GENERAL INFORMATION

Scope against which the surveillance is undertaken: MSC Principles and Criteria for Sustainable Fishing as applied to the British Columbia Commercial Sockeye Salmon Fisheries managed by Fisheries and Oceans Canada within the follow 4 units of certification:

1. Nass
2. Skeena
3. Barkley Sound
4. Fraser

Species: Sockeye Salmon (*Oncorhynchus nerka*)

Area: British Columbia, Canada

Method of capture: Seine, gillnet, troll, beach seine, fish wheels, weirs, dip nets

Date of Surveillance Visit:	**14 – 18 May 2012**			
Initial Certification	**Date: July 2010**		**Certificate Ref: MML-F-066, MML-F-067, MML-F-068, MML-F-069**	
Surveillance stage	**1st**	**2nd**	**3rd**	**4th**
Surveillance team:	**Lead Assessor:** **Steve Devitt** **Assessor(s):** **Karl English** **Dana Schmidt** **Greg Ruggerone**			
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2.0 SUMMARY OF THE 2011 SALMON FISHING SEASON

The units of certification for the British Columbia sockeye salmon are the non-First Nation commercial sockeye fisheries and the First Nation Excess Salmon to Spawning Requirement (FN ESSR) fisheries and FN Economic Opportunity (EO) fisheries targeting sockeye returning to the four following watershed systems:

1) Skeena Watershed - Skeena and Nass sockeye are currently harvested in marine portions of Areas 3, 4 and 5 and freshwater areas within Area 4.
2) Nass Watershed - Nass sockeye are currently harvested in marine portions of Areas 3, 4 and 5 and freshwater areas within Area 3.
3) Barkley Sound - Barkley Sound sockeye are only targeted in Area 23.
4) Fraser River Watershed - Fraser Sockeye are primarily harvested in marine Areas 11, 12, 13, 20 and 29 and freshwater areas within Area 29

These fisheries are defined by geographic area and gear targeting sockeye however management measures are in place to distribute the harvest on stocks that can better withstand higher rates of harvest or distribute the harvest amongst different users. These fisheries represent the majority of the BC commercial fisheries that harvested sockeye salmon in recent years. Fishery openings and closings are managed and reported based on defined management areas A – H for the three primary harvest methods, seine (Areas A, B), gillnet (Areas C, D, E) and troll (Areas F, G, H), as displayed below. Management summaries are provided within the context of these management areas.

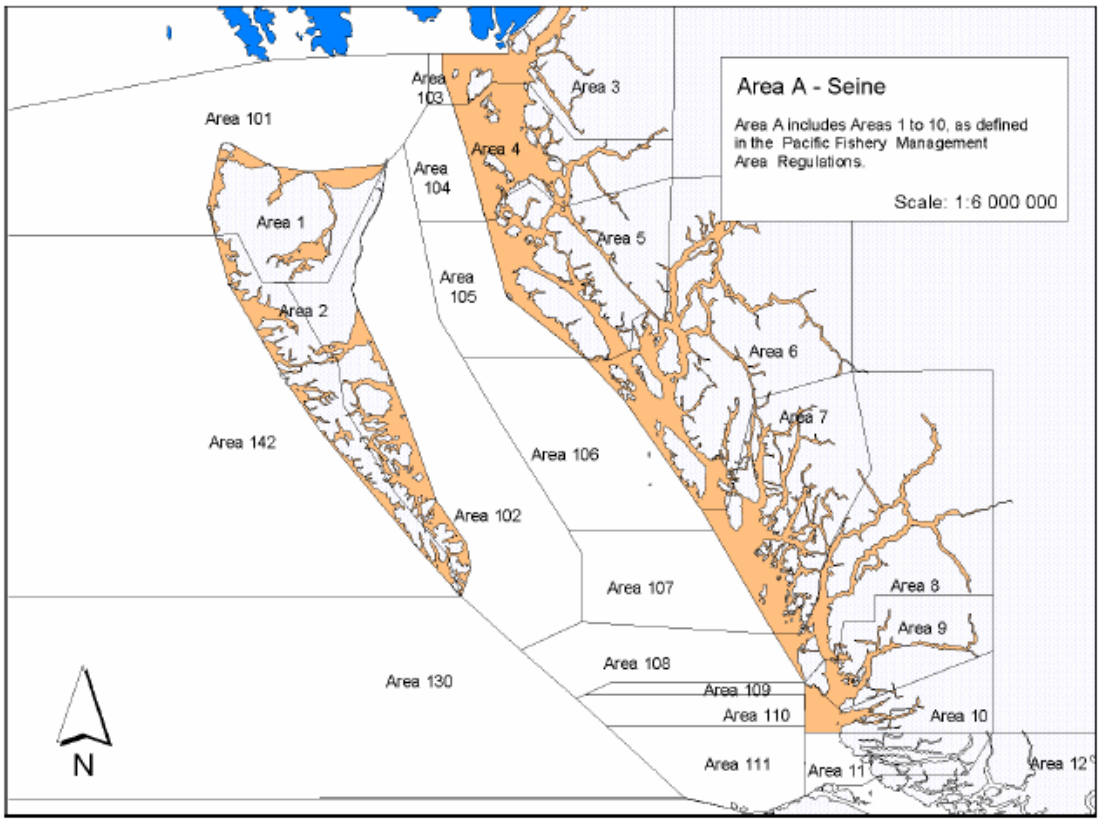


Figure 1: Area A, northern seine fishing management area for salmon

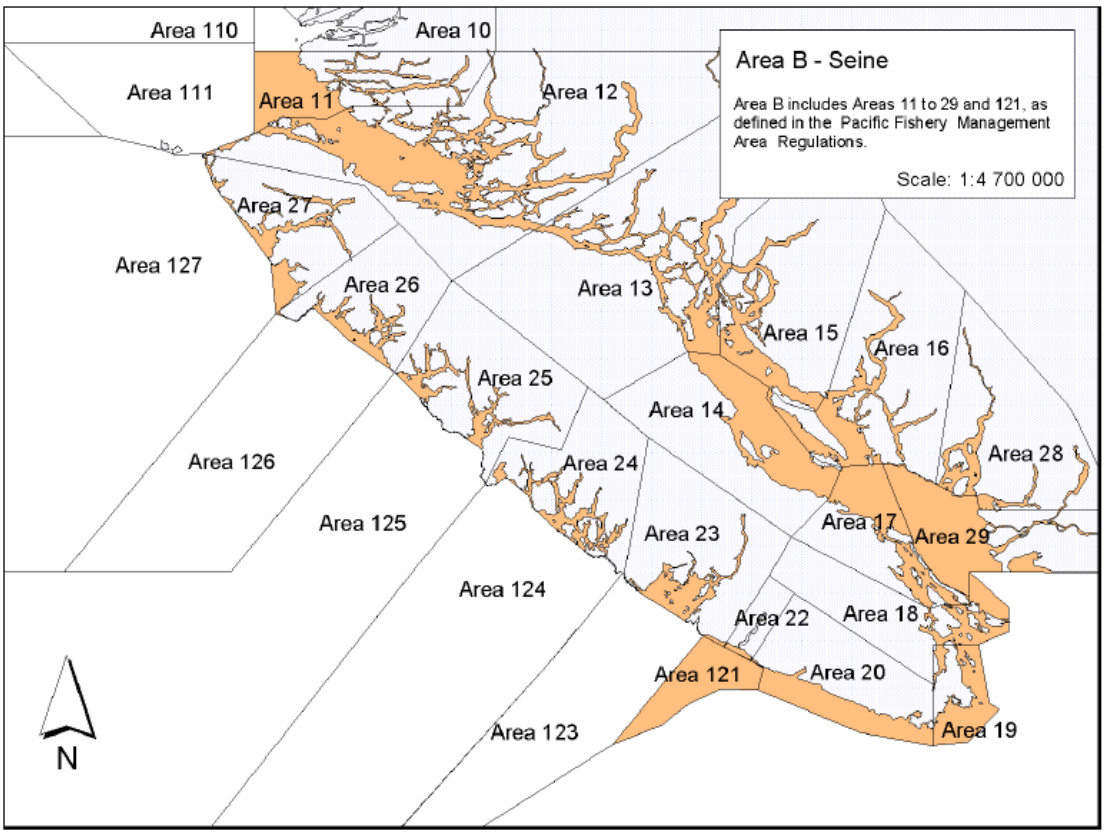


Figure 2: Area B, southern seine fishing management areas for salmon

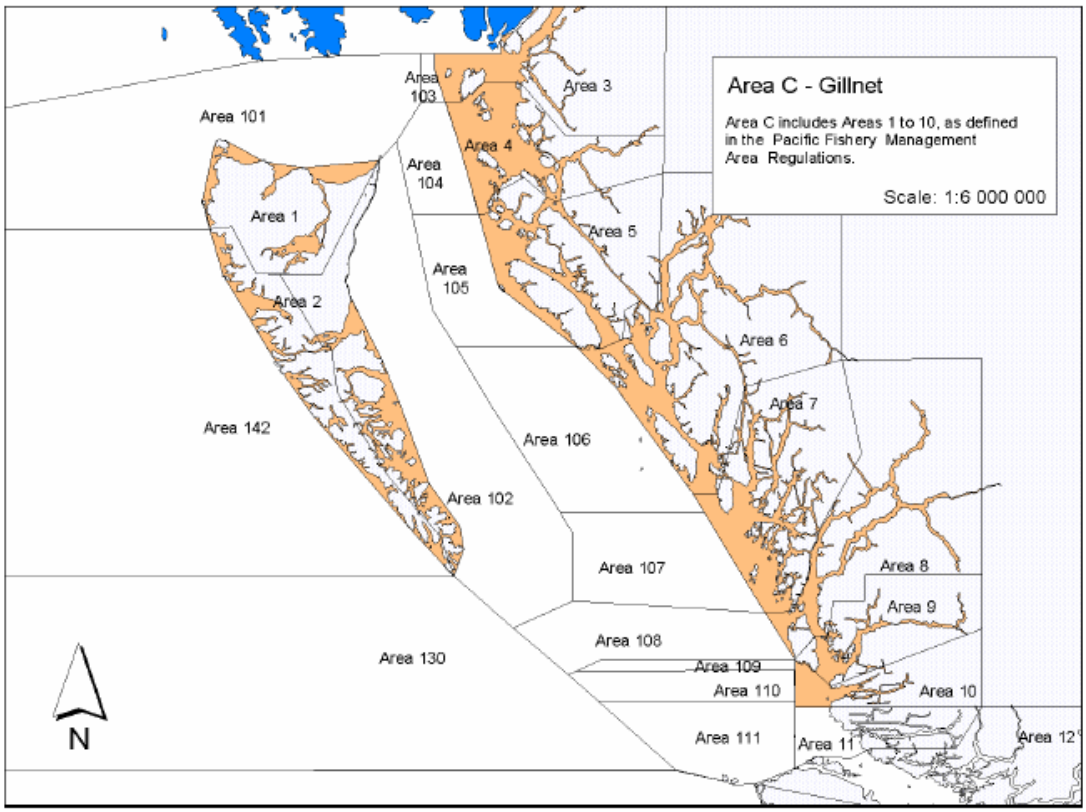


Figure 3: Area C, northern gillnet salmon fishing management areas.

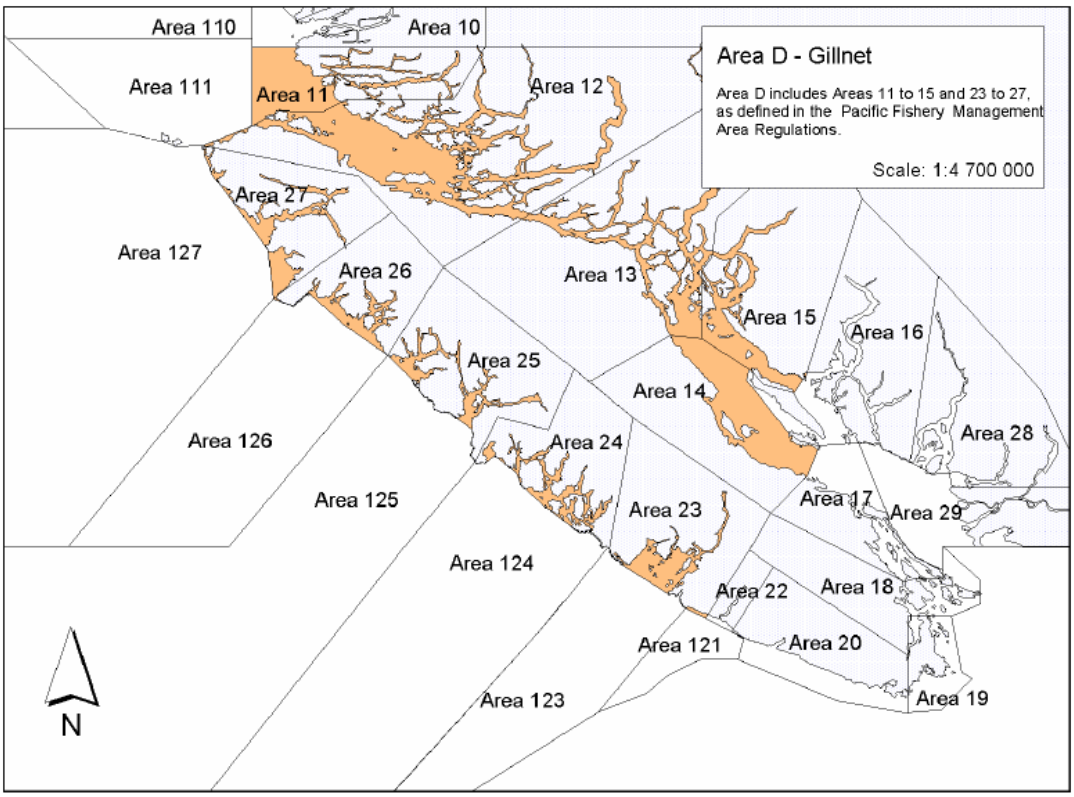


Figure 4: Area D, southern gillnet salmon fishing management areas.

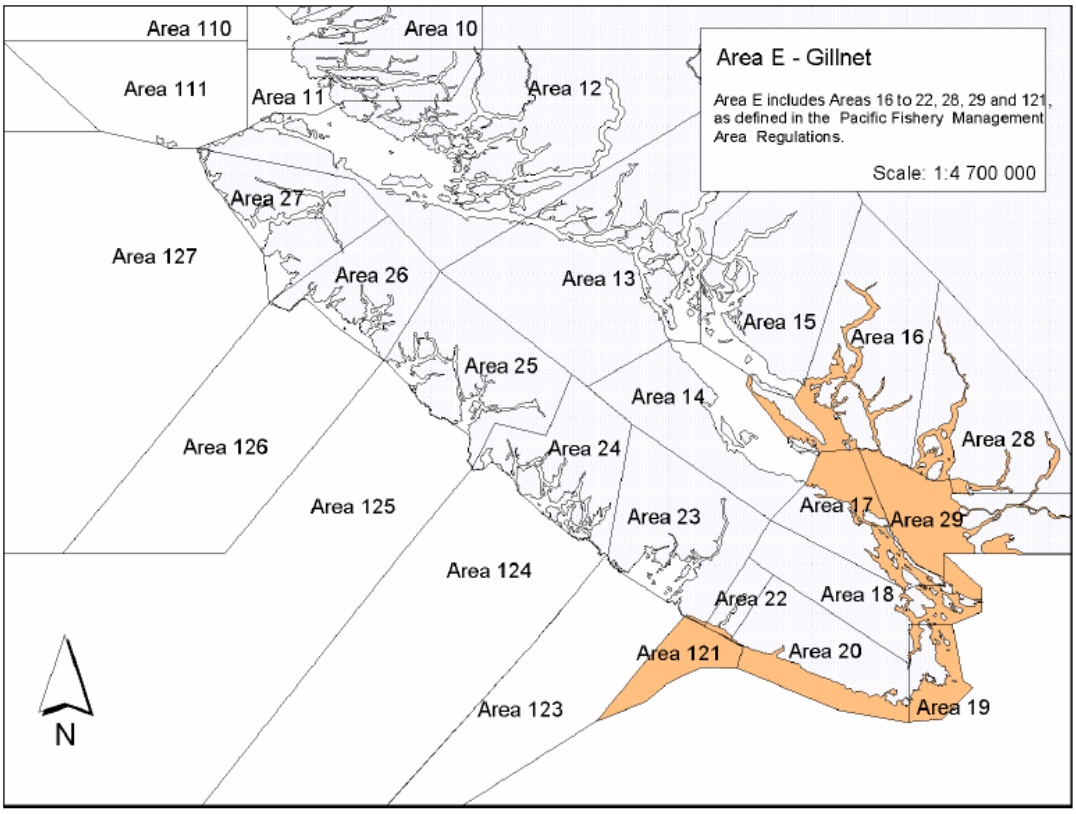


Figure 5: Area E, southern gillnet salmon fishing management areas.

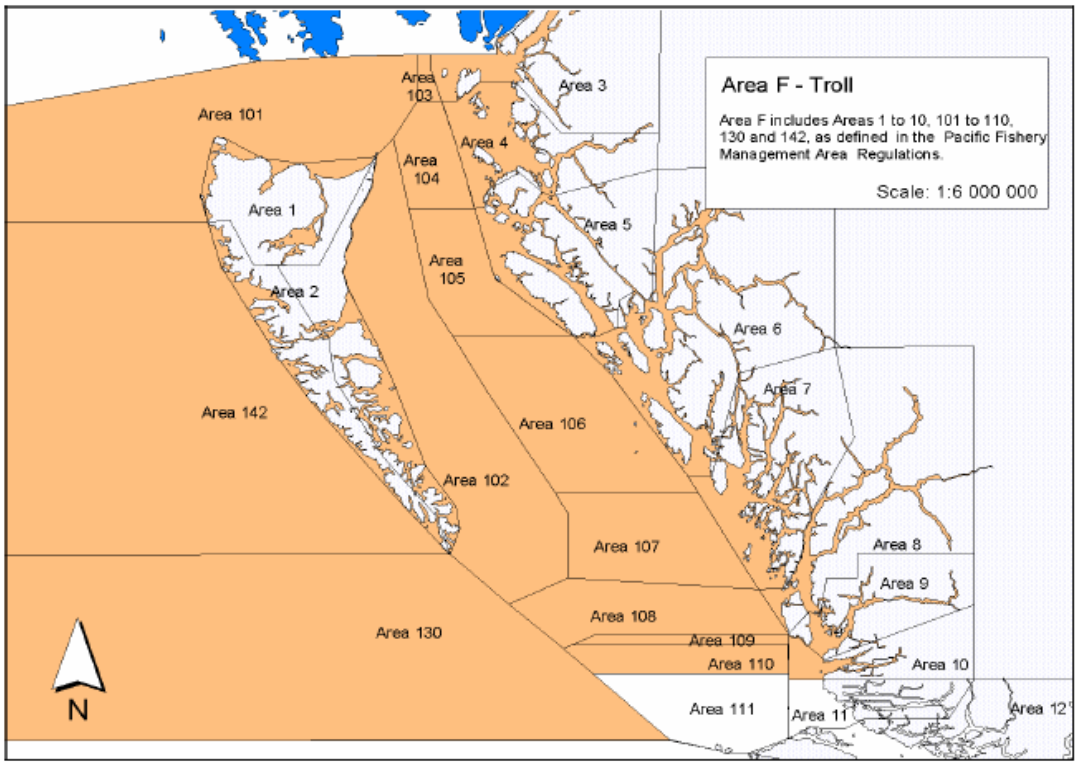


Figure 6: Area F, northern troll salmon fishing management areas.

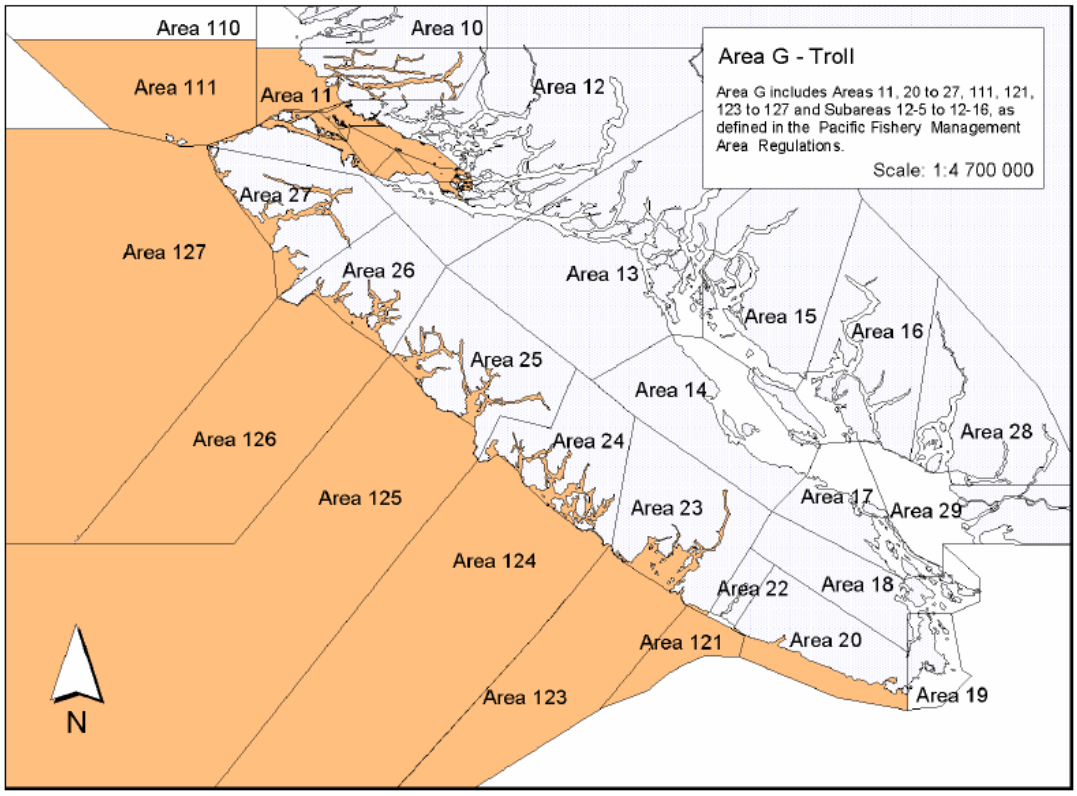


Figure 7: Area G, West coast Vancouver Island troll fishing management areas.

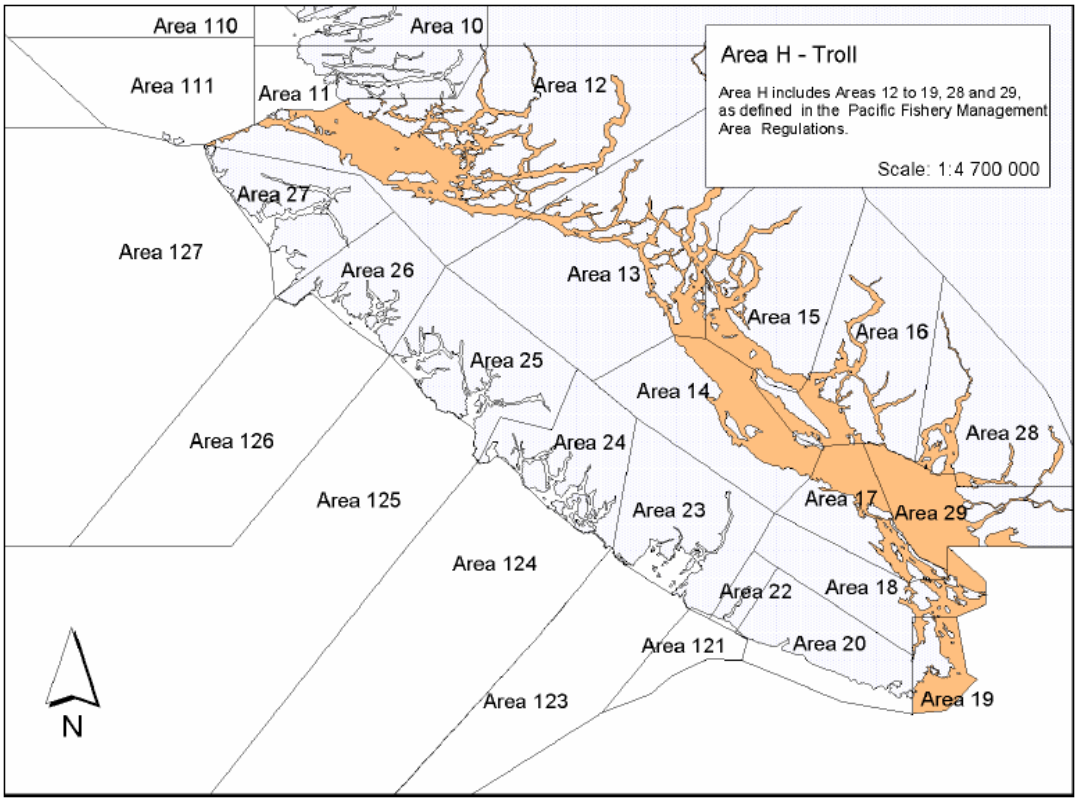


Figure 8: Inside troll salmon fishing management areas.

Table 1: 2011 British Columbia commercial sockeye salmon retained catch to date (pieces), April 1, 2011 - March 30, 2012.

Area	Commercial Sockeye Catch	Estimates
Seine		
Area A	148,643	Complete
Area B	290,183	Complete
	Seine Total – 438,826	
Gill Net		
Area C	366,689	Complete
Area D	331,881	Complete
Area E	159,431	Complete
	Gill Net Total – 858,001	
Troll		
Area F	6,651	Complete
Area G	0	Incomplete
Area H	13,051	Incomplete
	Troll Total – 19,702	
Total Commercial Sockeye Harvest – 1,316,529		

Notes
1. Data does not include test fishing, recreational or First Nations data
2. Data considered preliminary
3. All catch estimates are reported in pieces and included both adults and jacks
4. Estimates column includes either "complete", meaning catch estimates are available for all days fished, or "incomplete" means that at least one catch estimate is missing.

Source: Fisheries and Oceans Canada Fisheries Operations System Report. (http://www-ops2.pac.dfo-mpo.gc.ca/Fos2_Internet/pdfs/2011SalmonSummary.pdf)

2.1 Nass and Skeena – Salmon Fishing Areas 3 - 5

AREA 3 (As summarized from the 2011 Salmon Post Season Review)

There are three First Nations groups that fish for Food, Social and Ceremonial purposes in Area 3 or the Nass River. These are:

a) Lax Kw'alaams (Port Simpson).
b) The Nisga'a Lisims Government - Kincolith, Greenville, Canyon City and Aiyansh.
c) The Gitanyow - Member band Kitwancool. (Nass River Harvest)

Preliminary harvest estimates of Nass salmon in Nisga'a fisheries in 2011 were 60,441 Sockeye. The domestic FSC salmon fishery which was monitored from 30 April to 27 August as part of the Nisga'a Fisheries salmon catch monitoring program. Incidental salmon catches after August were added from the non-salmon catch and recreational catch monitoring programs. Four Marine individual sale fisheries were conducted in Area 3-12 (12 hr openings): June 23, June 24, July 1 and July 2. Total catches in the marine IS were: 4,945 Sockeye, 141 Chinook and 6 Pink salmon. Three in-river individual sale (10 hr) openings were conducted in 2011 (July 6, 8 and August 5). Total catches in the in-river IS fishery were 11,593 Sockeye salmon. Selective harvesting of Nass Sockeye at the GH fish wheels occurred from 6-11 July and 5 August. Coho harvesting occurred from 5-11 August. Total harvested at the GH fish wheels were 1,793 Sockeye.

Preliminary harvest estimates of Nass salmon in Gitanyow fisheries in the Upper Nass River were reported by the Gitanyow Fisheries Authority to week ending 3 September as: 13,091 adult Sockeye (201 tags recovered), 103 adult Chinook (7 tags recovered), 15 jack Chinook, and 18 adult Coho (0 tag recovered). No information was provided on any Steelhead catch. The total adult Sockeye harvested includes a commercial harvest of Sockeye (3,000) by the Gitanyow below the Meziadin Fishway as part of DFO's Inland Demonstration Fishery that occurred in mid-August.

Alaskan Harvests

Alaskan gillnet fisheries in Districts 101 (Tree Point) and 106 (Sumner and Upper Clarence) started on 19 June and 13 June, respectively. Alaskan seine fisheries started as follows: Districts 101 (Lower Clarence/Revilla) on 3 July, 102 (Middle Clarence) on 19 June, 103 (Cordova) on 31 July, and 104 (Noyes/Dall) on 3 July. In-season catches of salmon in Alaskan net fisheries in Districts 101-104 (and mean catch comparisons between 2000 and 2010) to week ending 3 September based on data from ADFG's website are shown below. In-season catches were below average for Sockeye, Chinook, Pink, and Coho; and above average for Chum. Of the total in-season sockeye catch reported in Alaskan fisheries to date (464,000), approximately 111,000 (24%) are estimated as Nass origin based on mean stock composition estimates from 1982 to 2007. The average harvest of Nass Sockeye in Alaskan fisheries from 2000 to 2010 is 139,000 to 17 September.

Preliminary harvest estimates of Nass salmon in Areas 1-5 commercial fisheries for 2011 were approximately 110,700 Sockeye based on commercial catch data from DFO Prince Rupert and methods developed by the Nass Joint Technical Committee.

Commercial fishery openings in Area 3 for 2011 were: 10 gillnet and 6 seine. DFO closed Area 3 on 22 August to any further gillnet and seine fisheries for 2011. Commercial gillnet and seine harvest and release data for Nass salmon and Steelhead in Area 3.

The preliminary TRTC estimates used by the Nisga'a Fisheries and Wildlife Department for tracking Nisga'a salmon entitlements for 2011 were 461,000 Sockeye. The preliminary TRTC salmon estimates were higher than the pre-season estimates for Sockeye (461,000 vs. 420,000).

Area 3 Commercial Net Fishery Summary

The Area 3 commercial net fishery was planned in anticipation of harvesting a surplus of 158,000 Nass sockeye with an above average pink return while meeting a number of preseason commitments. These commitments included managing in accordance to the Nisga'a Treaty, the Pacific Salmon Treaty, allocation issues, chum and Chinook rebuilding, coho exploitation rates and limiting impacts on steelhead. Some of the restrictions put into place to deal with these commitments were, closed areas, daylight only fisheries, non-

retention chum and steelhead for both gear types, mandatory brailing for seines, non-retention Chinook for seines and a request for gill nets to release all live Chinook.

The first commercial gill net sockeye opening in Area 3 occurred June 19 with 125 vessels taking part in the fishery. Non retention chum in area 3 was in effect throughout the commercial fishing season however chum intercept rates remained a concern. The Wales Island (1 mile boundary), Pearse Island (.5 mile shore boundary) and Emma Pass (the lead waters into the Khutzeymateen Inlet) boundaries were in place throughout the season to minimize the impact on chum migrating to Area 3.

Sockeye escapements to the Kwinageese River have been extremely poor for at least the previous two years. Management actions were taken in 2011 to reduce harvest impacts on Kwinageese sockeye reducing marine commercial fishing opportunities from July 8th to July 28th (peak migration timing of Kwinageese sockeye through the commercial fishery based on DNA analysis) in Area 3. Openings were scheduled around the Kwinageese management weeks in order to achieve the in–season Nass sockeye TAC.

Gill net sockeye catches in Area 3 were modest early in season leading up to the Kwinageese management weeks. After the Kwinageese management weeks the majority of the commercial gill net fleet had been drawn into area 4 due to good sockeye catches with vessels alternating Areas (3 & 4) between openings. Coho retention was opened to gill nets in Area 3 for a total of four openings (August 1, 2, 8 & 15).

The maximum number of gill nets operating in Area 3 occurred July 7 with a count of 145 gill nets actively fishing. The total number of openings was 10 for 1,018 vessel operating days compared to the 10 year average of 16.5 openings and 3,052 vessel operating days.

The first seine opening in Area 3 occurred July 11 with 12 vessels participating in the fishery. Nine vessels participated in a seine opening during the peak Kwinageese management week on July 18 targeting pinks with non-retention of sockeye. The peak seine fleet operating in Area 3 took place on July 29 with 49 vessels fishing.

Sockeye and pink seine catches were poor mid July increasing slightly towards the end of the month. Coho retention was opened to seines in Area 3 for a total of two openings on August 1 and 2nd. Stream Inspections/reports towards the end of July and August in Area 3 suggested a poor run of pinks limiting seine pink fishing to the first two days in August.

The total number of openings for 2011 was 6 for 164 vessel operating days compared to the 10 year average of 16.1 openings and 350.8 vessel operating days.

The total Area 3 hailed commercial net catch for 2011 was 130,497 sockeye and 318,885 pink. This compares to the 10 year average catch of 237,665 sockeye and the five odd year average of 1,983,879 pink. Total commercial coho catch for Area 3 was 4,340.

Nisga'a Fisheries did a remarkable job in regards to Nass in-river assessment throughout the 2011 season. Fish-wheels were monitored and moved constantly throughout the season to maximize catch rates during fluctuating water conditions. Nisga'a fisheries were also successful in locating and correcting the natural barrier in the Kwinageese River allowing sockeye and Chinook to access upper spawning habitat.

Escapement monitoring

The Nass River test fishery fish wheels (FW#1 and FW#2) were ready for operation on 1 June for tagging and historical catch index assessments for salmon and Steelhead; but were not started until 6 June due to high water. A third fish wheel (FW#7) below GW was operated from 11 June to 23 July for applying additional Chinook salmon tags as part of the Nass Chinook PSC Sentinel Stock Program. GW fish wheels (FW#1 and FW#2) stopped operation on 17 September. All fish caught in the GW fish wheels were released.

Nass Fishwheel sockeye catches were above average for adult sockeye in 2011, 38,083 versus an average of 35,783. 2647 sockeye jacks were caught at the fishwheels in 2011.

At the Meziadin fishway operated from July 1 to October 6, 2011. 167,524 adult sockeyes and 4,830 jacks were counted. The escapement target for sockeye at the Meziadin is 160,000.

The Kwinageese weir net operated from July 10 to October 5 and counted a total of 10,114 adult sockeye, well above the average of past years.

The Gingit Creek sockeye surveys were conducted on 26 July; 3, 8, 11, 22, 29 August; and 5 September. Raw live counts were expanded for unsurveyed habitat and reach specific estimates of observer efficiency. A preliminary escapement estimate of 11,837 was calculated for 2011 using AUC methodology with a residence time of 13.1 days derived from a tag life curve of Nass fishwheel-applied spaghetti tags. The peak estimated (habitat and observer efficiency expanded) live count (7163) occurred on 8 August; peak carcass count (1558) occurred on 22 August. The escapement estimate for 2011 is the highest recorded since Nisga'a Fisheries began escapement surveys in 2000 and is well above the 2000-2010 average (mean=2800, range: 400 (2002) to 9,300 (2009)).

The Seaskinnish weir counts for sockeye was 17 adult sockeye and 2 jacks, over the period of July 17 to November 17.

Damdochax Creek surveys were conducted and a preliminary escapement estimate of 2634 Sockeye salmon was calculated using AUC methodology, with a residence time of 13.1 days based on Gingit Creek tag curve residence time analysis in 2011; zero count dates were estimated using the MonteMaster AUC program.

Preliminary aggregate adult escapement estimates to Gitwinksihlkw fish wheels in 2011 were 308,600 Sockeye.

Based on the 2011 preliminary results, Upper Nass run size targets were reached for Sockeye, Coho and summer-run Steelhead; but not for Chinook salmon. System-wide net escapement goals were reached for Sockeye, Coho and summer-run Steelhead; but not for Chinook, Pink or Chum salmon in 2011.

In-season fishwheel run size and escapement tracking during the 2011 season went reasonably considering unusual water levels when comparing with preliminary post-season estimates. The in-season Sockeye salmon estimate was ~12% lower than the post-season estimate. The in-season Chinook and Coho salmon estimates were ~18% higher and ~18% lower than the post-season estimates for each species respectively.

AREA 4 (As summarized from the 2011 Salmon Post Season Review)

A number of First Nations harvest fish for Food, Social and Ceremonial purposes in Area 4 and the Skeena River Watershed. These are:

a) The Tsimshian Communities of Lax Kw'alaams (Port Simpson), Metlakatla, Kitkatla, Kitsumkalum, Kitselas: Skeena River Watershed and approach waters.
b) Gitksan First Nation: Mid-Skeena River area.
c) Wet'suwet'en First Nation: Bulkley River watershed, but mainly at Moricetown.
d) Lake Babine First Nation including the communities of Tachete, Fort Babine and Burns Lake: Upper Skeena, Babine River and Babine Lake.
e) Takla Lake and Yekooche First Nations – Upper Skeena waters including Babine Lake.

Fishing activities were conducted in much the same fashion and locations as in past years. As in recent years, all the bands were licensed to fish through a communal fishing license and specific allocations of each salmon species were mutually agreed to where possible. Table 2 presents the FCS sockeye catch for the Skeena and Nass systems.

Table 2: 2011 Nass & Skeena Food, Social and Ceremonial (FSC) Sockeye Catch.

Area	Number Caught
Lower Skeena	42,043
Mid Skeena	63,146
Upper Skeena	41,093
Skeena Total	146,282
Nass	10,091

Economic opportunity fisheries were conducted by First Nations on the Nass and Skeena in July and August 2011 using selective harvest means. The Lake Babine FN harvested their allocation of 32,848 sockeye at the

Babine counting fence. The Gitskin FN harvested 21,529 of the 26,713 allocated salmon in the Skeena Kitwanga area. The North Coast Skeena First Nation Stewardship Society harvested 595 of 887 allocated sockeye. The Lake Babine FN conducted an ESSR fishery in the Babine Lake, Fulton area and harvested 185,393 of the 234,000 allocated sockeye.

The Area 4 net fishery was planned in anticipation of a commercial sockeye surplus of 218,000 and an above average pink return. The fishing plan had to be consistent with goals for, rebuilding coho, chum & wild sockeye stocks, limited steelhead exploitation, Chinook escapements and sector allocations. Some of the restrictions in place to attain these goals were non-retention chum & steelhead for seines and gill nets, time and area closures, harvest rate limitations, daylight only fisheries, mandatory brailing for seines, non-retention Chinook for seines, half-length gill nets and 20 minute sets.

The 2011 preseason commercial surplus forecast for the Skeena River supported 3 to 4 commercial openings for the sockeye season. Openings were based on Skeena salmon returns, as measured at the Tyee test fishery.

Sockeye figures past the Skeena Tyee Test fishery began to increase July 9 and the first gill net opening targeting sockeye took place July 13. The sockeye were reported to be large in size and migrating up river against the large tides. Low commercial catches were recorded in the slough and high catches along the southern shore leading into the Skeena River throughout the season. Sockeye gill net catches improved on the outside of Tugwell Island and Finlayson Island late July - early August. Coho retention was opened to gill nets in Area 4 for a total of four openings (August 4, 7, 11 & 15).

Peak gill net fleet in Area 4 for 2011 occurred July 18 with 252 vessels participating in the fishery.

Area 4 gill nets fished a total of 9 openings (1 Chinook and 8 sockeye openings – 3 regular and 5 selective gill net openings) with 1,595 vessel operating days compared to the ten year average of 11.5 openings and 3313.8 vessel operating days. Total sockeye catch was recorded at 249,050 sockeye compared to the ten year average of 397,319. Total commercial coho catch for Area 4 was 6,421.

The ITQ seine fishery was opened in Area 4 July 15 – July 20, August 5 – August 14 achieving a final sockeye catch of 60,843 (quota managed) and a final pink catch (not quota) of 97,970, compared to the last ten year sockeye average of 127,174 and five year odd average of 509,186 pinks. Coho retention was opened to seines in Area 4 from August 5 to August 14.

Area 104 Troll Fishery

Harvest areas were adjusted in 2011 and included Subareas 104-1, 104-4 and 104-5 which opened from July 15th until September 30th. A total of 299 boat days were reported from this Area which is adjacent to the Two Peaks. A total of 92 sockeye, 49,604 coho and 2,506 pink salmon were harvested in the Area.

AREA 5 (As summarized from the 2011 Salmon Post Season Review)

Fishing activities were conducted in much the same fashion and locations as in past years. As in recent years, all the bands were licensed to fish through a communal fishing license and specific allocations of each salmon species. All bands were responsible for designating fishers as well as gathering and reporting catch information to DFO.

Area 5 is largely managed as an extension of the Area 4 fishery with a potential late fishery on local pink stocks. The forecasted surplus of local pinks was for an average return. Low chum escapements remain a concern and fisheries continue to be managed to rebuild these stocks. All fisheries were conducted with non-retention chum. Area 5 was opened to gill nets in conjunction with Area 4 to harvest Skeena River sockeye migrating through Ogden channel.

Peak gill net fleet in Area 5 occurred July 18 with 8 vessels participating in the fishery. Area 5 gill nets fished a total of 8 openings (3 regular fisheries & 5 selective gill net openings in conjunction with Area 4) with 11 vessel operating days compared to the ten year average of 9 openings and 54.1 vessel operating days.

Due to indications of low abundance from charter patrol pink stream inspection reports, Area 5 was not opened to seines for 2011.

Total sockeye catch for 2011 in Area 5 was recorded at 1,610 sockeye.

2.2 Fraser River Salmon Fishing Areas

The following information was summarized or copied from the "*Post-Season Report for 2011 Canadian Treaty Limit Fisheries",* dated January 4, 2012, prepared for the Pacific Salmon Commission by Fisheries and Oceans Canada.

The majority of First Nation FSC harvest in the marine areas occurred in August. The majority of the catch and fishing effort in marine areas was in Johnstone Strait.

First Nation FSC harvest targeting sockeye in the Fraser River began in late July and was open, per licence conditions, until the Interior Fraser coho closure came into effect in September.

There were directed sockeye harvest opportunities for First Nations FSC, commercial (including First Nations demonstration and economic opportunities), and recreational sockeye retention fisheries. Initially, sockeye harvest opportunities were restricted for all harvest groups based on the requirement for a four week moving window closure to protect Early Stuart sockeye and the early-timed Early Miscellaneous component of the Early Summer-run stock group. This moving window closure was first lifted in the marine areas on July 23, 2011. The moving window closure was lifted in areas of the Fraser as planned pre-season.

Commercial fisheries occurred from early August to mid September. Area B Seine and Area H troll fisheries were managed as individual transferable quota (ITQ) fisheries. Area D and E Gill net fisheries were both managed as competitive, derby-style fisheries. Commercial fisheries occurred in Johnstone Strait, Strait of Georgia, and in the lower Fraser River.

Table 3 provides estimates of the Fraser River sockeye catch by run timing group, while Table 4 provides the final in-season TAC and preliminary post season catch estimates for the Fraser River.

Table 3: Final in-season estimates of Fraser River sockeye catch in Canada and US, based on last FRP in-seasons meeting on September 29, 2011.

Stock	Pre-season total TAC*	Final In-season total TAC*	Final In-season Catch
Early Stuart	0	0	1,900
Early Summer	227,500	246,500	194,700
Summer-run	885,400	919,000	784,900
Harrison	380,900	609,200	268,200
Lates		701,700	381,600
Total	**1,493,800**	**2,476,400**	**1,631,300**

Table 4: Final Fraser in-season TAC and preliminary post season Catch as of November 29, 2011.

Stock	Early Stuart	Early Summer	Summer	Late	Total
Test Fisheries	190	7,000	14,000	20,000	40,000
U.S. Catch					
Commercial	20	15,000	102,000	150,000	266,000
C&S	0	530	2,900	9,100	13,000
U.S. Total	20	15,000	105,000	159,000	279,000
U.S. TAC [a]	0	34,000	108,000	164,000	306,000
CDN Catch					
Commercial	20	35,000	193,000	215,000	443,000
Recreational [c]	0	4,600	14,000	31,000	49,000
Other [b]	20	910	2,300	1,000	4,000
FSC [d]	1,600	132,000	456,000	225,000	815,000
CDN Total	1,700	173,000	665,000	471,000	1,311,000
CDN TAC	0	221,000	807,000	920,000	1,948,000

[a] 16.5% TAC – no payback
[b] Other catch is sockeye captured in multi-species non-Panel approved test fisheries (Albion and Qualark)
[c] Not yet corrected for Fraser/non-Fraser stock ID in marine recreational catches.
[d] Preliminary stock ID only.

Table 5 below, outlines potential exploitation rates based on the p50 forecast, pre-season MAs and 2011 TAM rules, and final in-season exploitation rate estimates based on final in-season estimates of run size and catch.

Table 5: Potential exploitation rates for Fraser run timing groups

	Pre-season *	Final In-season Season **
Early Stuart	10%	8%
Early Summer	52%	34%
Summer	60%	50%
Late	32%	22%
Harrison	32%	19%
Non-Harrison	32%	25%
Cultus ***	20%	20%

* ER is based on 2011 TAM rules, median pMAs and the p50 forecast
** ER is based on 2011 TAM rules, final in-season pMAs and final in-season run sizes
*** ER is assumed to be the same as similarly timed Late-run stocks (excluding Harrison and Birkenhead) stocks

Fraser River water discharge levels were high for the majority of the sockeye migration, with some periods of extreme discharge during the earlier part of the migration. The extreme water levels appear to have had negative impacts on Early Stuart sockeye as the migrated to the spawning grounds.

Preliminary spawning ground escapement estimates indicate a very low return of Early Stuart sockeye to the spawning grounds in 2011 at 751 (14% of the brood year of 5,347).

The preliminary Early Summer sockeye escapement estimates of 231,043 indicate a good return relative to brood year (123,461), as well as a return greater than the recent cycle average of 174,480. The preliminary escapement is nearly twice the brood year and the second largest escapement on record on this cycle.

Preliminary Summer sockeye escapement estimates of 1,052,670 indicate a good return and the fourth largest spawning escapement on record on this cycle. It is almost 2.5 times the 2007 brood year (432,274) and is 7% higher than the recent cycle average of 980,436.

Table 6 outlines projected escapement information relative to the escapement goals at the final in-season run sizes. Spawning ground estimates for Late-run sockeye are currently not available.

Table 6: Preliminary Fraser sockeye escapement information to dates

Management Group	Escapement Goal @ final in-season run size	Predicted Escapement	*Preliminary Spawning Esc.
Early Stuart	25,000	4,530	751
Early Summer	228,400	270,760	231,043
Summer	622,400	771,130	1,052,670
Late-run			
Harrison	552,000	806,290	na
Non-Harrison	618,000	861,040	na
Total	***2,045,800***	***2,713,750***	

* Based on final in-season catch estimates and predicted differences between estimates

2.3 Barkley Sound Salmon Fishing Areas

Somass sockeye are harvested in Alberni Inlet by Nuu-chah-nulth First Nations resident in Port Alberni and by Maa-nulth Treaty Nations in Barkley Sound. Some harvest has taken place in some previous years by First Nations from other areas on the West Coast of Vancouver Island. The Maa-nulth Treaty and Harvest Document specifies the quantity of Somass sockeye available for harvest for Maa-nulth Treaty Nations at different run- sizes. The Somass River Sockeye Management Plan delineates the harvest of sockeye by Tsu-ma-uss First Nations (Tseshaht and Hupacasath). At higher run-sizes, a Tsu-ma-uss Economic Opportunity Fishery Agreement may be entered by DFO and the Tsu-ma-uss Nations for sale and for Food, Social and Ceremonial use of Somass sockeye.

Sockeye fishing is carried out in Somass River by gill-nets set from small open vessels. In Alberni Inlet and Barkley Sound fishing is most often carried out with seine and gill- net vessels. These vessels are either band-owned or contracted. There is occasionally a minor amount of hook-and-line effort, particularly in Somass River.

In 2011 the Tsu-ma-uss First Nations signed an Agreement to conduct Economic Opportunity Fisheries for sockeye, chinook, coho and chum salmon. The customary fishing plan for the Somass sockeye component of the Agreement includes a 48 hour gill- net opening from noon Sundays to noon Tuesdays with communal drag-seining in Somass River at Papermill Dam Thursdays for Hupacasath First Nation and Fridays, Saturdays and Sundays for Tseshaht First Nation.

In 2011, the total estimated catch of Somass sockeye for food, social and ceremonial purposes for all Nuu-chah-nulth First Nations was 49,586 sockeye (35,100 Somass sockeye by Tseshahat and Hupacasath First Nations and 14,486 (Somass and Henderson) Sockeye by Maa nulth Treaty First Nations).

In 2011 commercial net opportunities for sockeye in Area 23 were planned based on the pre-season forecast of 600,000 Somass sockeye. The first in-season run-size re-forecast was made on June 30.

Run re-forecasting was done weekly on Thursdays after June 30 and through the fishing season based on test-fishing results, catch information and CUPE results. Fishing plans were developed weekly as commercial TAC increased through the season to 886,400. Preliminary sockeye catch results from the commercial fishery was 192,197 for the Area B seine fishery in Barkley Sound (Management Area 23) while the Area D gillnet fishery harvested 237,160 sockeye.

The estimated total return of Somass sockeye in 2011 was approximately 1,400,000. The long-term average return is 760,000. The 2011 return was greater than pre-season expectations and one of the highest returns on record. The preliminary escapement estimate of sockeye to Great Central Lake was 434,700 and 405,600 fish for Sproat Lake for a total of 840,300, on of the highest escapements on record. Figure 9 provides annual estimates of Somass sockeye catch and return to Great Central Lake and Sproat Lake.

The Henderson Lake sockeye return was approximately 40,000 to 60,000, a significant improvement over recent years. Information from other sockeye stocks on the WCVI is limited, however, observations suggest returns were above recent year averages for populations such as Kennedy and Jantzen Lakes.

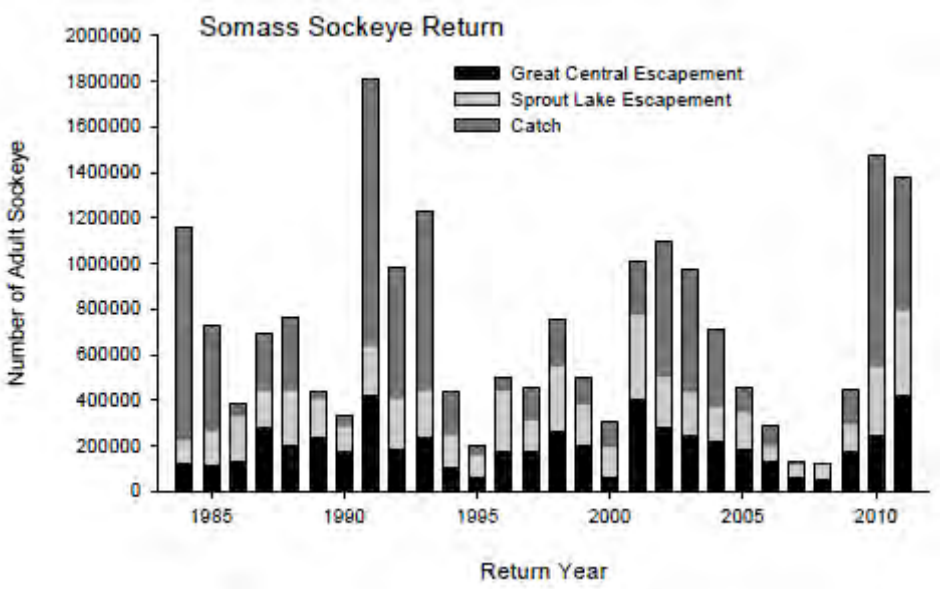


Figure 9: Annual estimates of Somass sockeye catch, and return to Great Central Lake (GCL) and Sproat Lake (SPL) by return year.

Changes in the Fishery and Fishery Management

The following summary is adapted from the 2011 Integrated Fisheries Management Plan for Salmon in Southern B.C.

Salmon management programs in 2011 were guided by policy and operational initiatives adopted over the past several years. These include; *Canada's Policy for Conservation of Wild Pacific Salmon* (WSP), *An Allocation Policy for Pacific Salmon,* Pacific Fisheries Reform, *A Policy for Selective Fishing*, *A Framework for Improved Decision Making in the Pacific Salmon Fishery*, the Integrated Harvest Planning Committee and Pacific Region Fishery Monitoring and Reporting Framework.

Canada's Policy for Conservation of Wild Pacific Salmon (also called the Wild Salmon Policy) sets out the vision regarding the importance and role of Pacific Wild salmon as well as a strategy for their protection.

An Allocation Policy for Pacific Salmon, announced in 1999, contains principles to guide the management and allocation of the Pacific salmon resource between First Nations, commercial and recreational harvesters, and forms the basis for general decision guidelines outlined in the IFM plan.

Pacific Fisheries Reform, announced by the Department in April of 2005, provides a vision of a sustainable fishery where the full potential of the resource is realized, Aboriginal rights and title are respected, there is certainty and stability for all, and fishery participants share in the responsibility of management. Future treaties with First Nations are contemplated, as is the need to be adaptive and responsive to change. This policy direction provides a framework for improving the economic viability of commercial fisheries, and to addressing First Nations aspirations with respect to FSC and commercial access and involvement in management.

In February 2009, the British Columbia Supreme Court (BCSC) ruled that the activity of aquaculture is a fishery which falls under exclusive federal jurisdiction pursuant to sub-section 91(12) of the Constitution Act, 1867 - Sea Coast and Inland Fisheries and, in effect, struck down substantial portions of the provincial regulatory regime governing aquaculture.

In light of the BCSC decision, it was clear that only the federal government has the authority to establish the comprehensive regulatory regime needed to ensure that the industry in British Columbia is appropriately regulated and managed.

In response to the BCSC decision, the Minister of Fisheries and Oceans has confirmed the commitment of the Government of Canada to establish a federal regulatory regime governing aquaculture pursuant to the Fisheries Act in the geographic area of British Columbia. As part of developing a new regulation, there will be consultations with sector stakeholders and, following pre-publication in Canada Gazette Part I, a 30 to 60-day review period during which further feedback from stakeholders will be taken into account. The BCSC gave DFO until December 18, 2010 to develop and implement a federal aquaculture regulation for BC.

Identified changed to fishery operations for the 2011 season are identified in the Integrated Fishery Management plans. Key changes affecting the Nass and Skeena units were as follows.

1. The aggregate Skeena sockeye return consists of runs from 25 different sockeye stocks. The objective for Skeena River sockeye is to harvest any surplus in a sustainable fashion, to enable rebuilding individual sockeye stocks of concern.
2. To achieve the objective, Canadian commercial exploitation rates will be based on run size, starting from zero at any run size below 1,050,000, climbing to 20% at run sizes of 2.0M, to 30% at run sizes of 5.0M, and thereafter maintaining a 30% Canadian commercial exploitation rate.
3. North Coast wild chum stocks remain depressed, and management actions will continue to be taken to reduce fishery impacts. In Area 3, gillnet and seine fisheries will remain closed to retention and possession of chum.
4. Area 4 will remain closed to retention and possession of chum for all commercial fisheries, and any directed sockeye and pink fishery will be managed taking into consideration by-catch impacts on chum.

Identified management changes 2011 Southern Salmon IFMP included a number of changes related to other salmon fisheries, pertinent sockeye changes are as follows.

1. Cultus Lake Sockeye will be managed within the constraints of the exploitation rate identified for the Late Run aggregate. The maximum allowable exploitation rate for Cultus Lake Sockeye will be the greater of a) the exploitation rate floor identified for Late Run Sockeye (currently set at 20%), or b) the exploitation rate that is consistent with continued rebuilding of the population based on in-season information on returns and potential numbers of effective spawners. The exploitation rate on Cultus Lake Sockeye is intended to allow for fisheries on more abundant co-migrating stocks. For Late run sockeye, abundance based Total Allowable Mortality rate options have been developed (see Section 7.5.4.4 of the 2011 SC Salmon IFMP).
2. The objective for Sakinaw Lake sockeye is to stop their decline and re-establish a self-sustaining, naturally spawning population. This objective will not be achieved until spawner abundance relative to previous brood years increases for at least 3 out of 4 consecutive years and there are no fewer than 500 natural spawners annually.

3.0 RESULTS, CONCLUSIONS AND RECOMMENDATIONS

This report contains the findings of the second surveillance cycle in relation to these fisheries.

Intertek Moody Marine conducted this surveillance audit in accordance with the MSC Certification Requirements version 1.2. Specifically, Section 27.22 Surveillance was the directive used in conducting the audit.

The client's response to the Conditions of Certification was set out in an Action Plan, which was appended to the final certification report (FCR). Auditors confirmed the progress of all client defined or alternative actions in relation to fulfilling all conditions identified in the FCR. For each condition listed below, the report sets out progress to date. This progress has now been evaluated by the Intertek Moody Marine assessment team against the commitments made. This assessment includes a re-evaluation of the scoring allocated to the relevant Performance Indicators in the original MSC assessment where a condition has been completed. Where the requirements of a condition are met, the Performance Indicators are re-scored and if the score is 80 or more, then the condition is closed. Table 7 provides a summary of the status of conditions at the conclusion of the first annual surveillance audit.

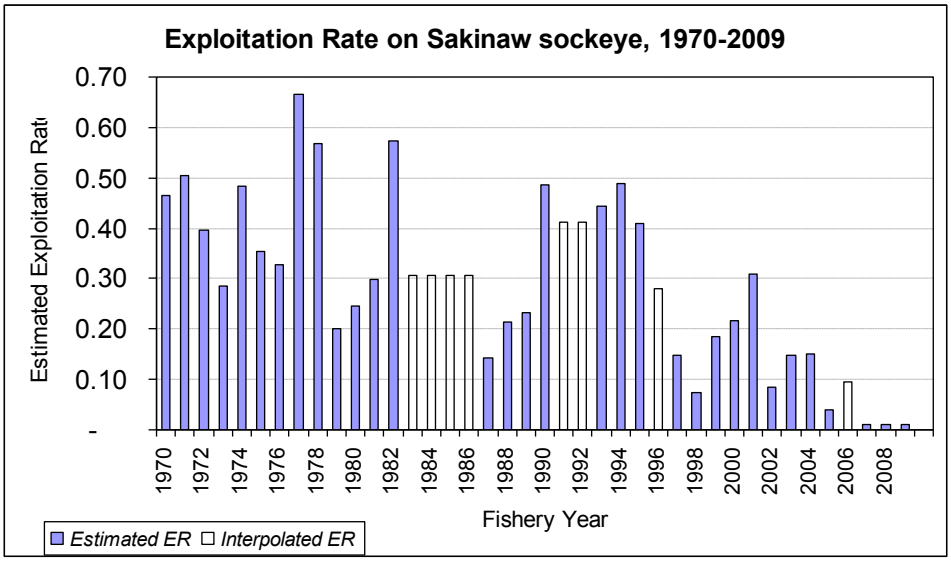
Table 7: Summary of Second Annual Surveillance Audit

Condition	Deliverable Due (Surveillance Audit No.)	Interim Milestones Prescribed?	Progress Evaluation	Status
1 Fraser P1	1	None	Progress observed, not completed.	New milestone set for 3rd audit
2	1	None	Completed	Closed out at 1st SA
3	1	None	Progress observed, not completed.	New milestone set for 3rd audit
4	1	None	Completed	Closed out at 1st SA
5	2	None	Progress observed, not completed.	New milestone set for 3rd audit
6	2	None	Progress observed, not completed.	New milestone set for 3rd audit
7	1	None	Completed	Closed out at 1st SA
8	2	None	Progress observed, not completed.	New milestone set for 3rd audit
17 – Fraser P2	2	None	Progress observed, not completed.	New milestone set for 3rd audit
18	1	None	Progress observed, not completed.	New milestone set for 3rd audit
19	2	None	Progress observed, not completed.	New milestone set for 3rd audit
24 Fraser P3	2	None	Progress observed, not completed.	New milestone set for 3rd audit
25	1	None	Completed	Closed out at 1st SA
26	2	None	Progress observed, not completed.	New milestone set for 3rd audit
27	2	None	Progress observed, not completed.	New milestone set for 3rd audit
28	1	None	Progress observed, not completed.	New milestone set for 3rd audit
29	3	None	Completed	Closed out at 1st SA
30	2	None	Progress observed, not completed.	New milestone set for 3rd audit
9 - Barkley P1	1	None	Progress observed, not completed.	New milestone set for 3rd audit

10	1	None	Progress observed, not completed.	New milestone set for 3rd audit
11	2	None	Progress observed, not completed.	New milestone set for 3rd audit
12	2	None	Completed	Closed out at 2nd SA
20 – Barkley P2	2	None	Completed	Closed out at 2nd SA
31 – Barkley P3	2	None	Completed	Closed out at 2nd SA
32	2	None	Completed	Closed out at 2nd SA
33	3	None	Progress observed, not completed.	New milestone set for 3rd audit
34	3	None	Completed	Closed out at 1st SA
13 Skeena – P1	2	None	Progress observed, not completed.	New milestone set for 3rd audit
13a	2	None	Completed	Closed out at 2nd SA
13b	2	None	Progress observed, not completed.	New milestone set for 3rd audit
13c	2	None	Progress observed, not completed.	New milestone set for 3rd audit
14	1	None	Completed	Closed out at 1st SA
21a - Skeena P2	2	None	Completed	Closed out at 2nd SA
21b	1	None	Progress observed, not completed.	New milestone set for 3rd audit
22	2	None	Progress observed, not completed.	New milestone set for 3rd audit
35a – Skeena P3	2	None	Completed	Closed out at 2nd SA
35b	2	None	Completed	Closed out at 2nd SA
35c	1	None	Progress observed, not completed.	New milestone set for 3rd audit
35d	2	None	Progress observed, not completed.	New milestone set for 3rd audit
36a	3	None	Completed	Closed out at 1st SA
36b	2	None	Completed	Closed out at 2nd SA
36c	2	None	Progress observed, not completed.	New milestone set for 3rd audit
15 – Nass-P1	1	None	Completed	Closed out at 1st SA
16	2	None	Progress observed, not completed.	New milestone set for 3rd audit
23 – Nass P2	2	None	Progress observed, not completed.	New milestone set for 3rd audit

3.1 Fraser Conditions – Principle 1

Condition 1	Certification is conditional until a review of the run timing and harvest rates for Sakinaw sockeye has been completed and the fisheries management plan is consistent with the goal of minimizing the harvest rate on Sakinaw sockeye, within one year (**Fraser Condition #1.1**).
Assessed Activity	This Condition relates to Indicator 1.1.1.3. PI: The geographic range for harvest of each stock management unit in the fishery is known. 100 Scoring Guidepost • The geographic range for harvests of each stock management unit in the fishery is estimated and documented each year. • The information on the geographic range of harvests is monitored during the fishing season and used when making in-season management decisions. 80 Scoring Guidepost • The geographic range for harvests of target stocks is defined. • The information on the geographic range of the harvests of target stocks is monitored during the fishing season and is sufficient to prevent the over harvesting of these stocks. • The information available on the geographic range for harvest of non-target stocks is sufficient to prevent the over harvesting of these stocks. 60 Scoring Guidepost • The information available on the geographic range for harvests of target or non-target stocks is sufficient to prevent the over harvesting for the majority of the stocks within each stock management unit. **SCORE 77** The management agency's detailed submission for Fraser sockeye (DFO Fraser 2003a, p.12) suggested that a score of 100 was appropriate for this indicator. An independent review of the DFO submission for Fraser sockeye (Wilson 2005) suggested that the 60 scoring guidepost was not met "due to the over harvesting of and decline of inside non-Fraser sockeye stocks. The Team found that the information on the geographic range of harvests is probably adequate to prevent the over harvesting of Sakinaw sockeye; however, deficiencies in the information and analysis on run timing through Johnstone Strait have likely resulted in some over harvesting of Sakinaw sockeye. References to Sakinaw sockeye include other inside south coast non-Fraser sockeye stocks with similar marine distributions and run-timing. The Team's score was 77 for this indicator.
DFO Action Plan	The assessment of timing and harvest rates based on run reconstruction techniques has been completed. Advice for fisheries management has been provided and the fisheries management plan is consistent with the advice as documented in 2007& 2008 South Coast Salmon IFMP. In particular the guidepost 80 "information available on the geographic range for harvest of non-target stocks is sufficient to prevent the over harvesting of these stocks" is met. For this reason we believe that we have met or exceeded the 80 scoring guidepost and therefore this condition should be removed. A report summarizing this information will be made available to the appropriate MSC certifying body for their review by September, 2010.
Observations from 1st Surveillance	In July 2006, DFO provided a several brief reports which included estimates of exploitation rates for Sakinaw sockeye. "Assessment of Sakinaw Exploitation Probabilities" prepared by Michael Folkes dated June 7, 2004 provided a detailed analysis of the effect of different run timing assumptions on the exploitation rates for Sakinaw sockeye. However, these run timing analyses have relied on fence count data which DFO has acknowledged is likely biased towards earlier run timing: *"these timing curves have not undergone run reconstruction. As mentioned in*

	Wood and Parken (2004), historical fishing impacts on this stock likely removed the back half of the run, which leads to a biased representation of run timing at the fence." A subsequent report entitled "Estimation of the 2005 Sakinaw Sockeye Exploitation Rate" prepared by Michael Folkes dated 25 October 2005" stated that: *"Until better marine timing information become available for the Sakinaw sockeye population, more precise estimates of ER not likely be available. The POST project (http://www.postcoml.org/research) applied 100 archival tags to Sakinaw sockeye smolts in 2004. Thus migration timing data may become available from the returns in 2006."* Unfortunately, these archival tags did not provide any new information on the run-timing for Sakinaw sockeye, thus recent harvest rate analyses have been based on the same assumptions as previous analyses. The results of these analysis were provided in the DFO submission entitled: "Update on Sakinaw Sockeye Recovery" dated 9 May 2011. The exploitation rate estimates for 2007-09 have been added to the follow figure originally reported in Folkes et al. 2006.  **Figure 10: Reconstructed exploitation rate on Sakinaw Lake sockeye for years where there is sufficient escapement information to support the reconstruction. Exploitation in years where escapement information is not sufficient is interpolated as average of two estimated ER immediately before and two estimated ER after. 2007, 2008, 2009 estimated to be less than 1% ER since no commercial fisheries. Test fishing and FSC only. Adapted from Folkes et al. 2006.** Under recent and current IFMPs for Southern BC Salmon, Johnstone Strait fishery openings targeting Fraser sockeye are delayed until end of July to minimize exploitation of Sakinaw sockeye.
Conclusion from 1st Surveillance Report	**DFO has reviewed the run timing and harvest rates for Sakinaw sockeye and the best available estimates indicate that exploitation rate for Sakinaw sockeye in Fraser sockeye fisheries have been very low in recent years. The 2010 IFMP clearly stated that the potential fisheries which could intercept Sakinaw sockeye continue to be delayed to allow those fish to pass.** **Given the almost complete closure of commercial fisheries for Fraser sockeye from 2007-09 and the substantial fisheries for Fraser sockeye in 2010, the evaluation of this indicator is differed until the 2nd surveillance audit when exploitation rates for 2010 Fraser sockeye fisheries will be available.** **During the next surveillance audit, the team will verify whether the fishery management plan has been successful at minimizing the exploitation rate on Sakinaw sockeye.**

Client Progress 2nd Surveillance	An estimate of the 2010 and 2011 exploitation rates for Sakinaw sockeye was provide in a eight page report prepared by Michael Folkes (2 May 2012). This report was an incomplete draft with several dates missing related to fence count operations and statements indicating that the author has concerns that the 2010 exploitation rate is an underestimate of the actual value. The run timing for the 2010 estimate was based on data from a return of only 29 sockeye whereas the 2011 run timing was derived from a return of 555 sockeye. The 2011 run timing was fairly consistent with the historical run timing data with the migration through Johnstone Strait extending through mid-August. In contrast, the minimal 2010 data does not include any returns after the end of July. Given the much more substantial fishery in 2010 than 2011 and PSC estimates of the Johnstone Strait harvest rates for sockeye exceeded 80% for a few days in early August and could have removed any returning Sakinaw sockeye. Consequently, the AT suggested that DFO provide an exploitation rate estimate for 2010 based on the 2011 or historical average run timing for Sakinaw sockeye.
Observations from 2nd Surveillance	The assessment team (AT) has identified concerns regarding the 2010 exploitation rate estimates for Sakinaw sockeye. Folkes states in his 2 May 2012 document that "based on knowledge of historical run timing, it is likely that the 2010 run timing estimate is not representative and the calculated exploitation rate is an underestimate of the actual value". In order to evaluate the status of this condition, the AT requires a scientifically defensible estimate of the 2010 exploitation rate for Sakinaw sockeye.
Conclusion from 2nd Surveillance Report	Based on the information presented to date, the team's conclusion is that the requirements of Condition 1 have not been met. The AT concluded that this condition is behind target as it was not met on the agreed schedule. As such, the AT have specified an additional milestone and deliverable timeframe in keeping with the requirements defined by the MSC Certification Requirements, version 1.2, Section 27.22, sub-note 116: *Those fisheries who signed a certification contract prior to 7 February 2011 may apply the following in place of 27.22.8.1 b i:* *If progress against an interim milestone is judged to be behind target, the CAB shall specify the remedial action required, and if relevant, further milestones and scores to be achieved, and the time frame by which the milestone shall be achieved.* The AT indicated that a 2010 estimate based on average historical or 2011 run timing would be more scientifically defensible than the 2010 estimates provided in the Folkes (2012) document. The client is to provide a scientifically defensible Sakinaw exploitation rate estimate for 2010 by the 3rd surveillance audit.

Condition 2	Certification will be conditional until a rigorous review has been completed to confirm that the indicator stocks reflect the status of the other stocks within each management unit, within one year (**Fraser Condition #1.2**).
Assessed Activity	This Condition relates to Indicator 1.1.1.4. PI: Where indicator stocks are used as the primary source of information for making management decisions on a larger group of stocks in a region, the status of the indicator stocks reflects the status of other stocks within the management unit. 100 Scoring Guidepost • The status of the indicator stocks is well correlated with the stocks that are most at risk from a conservation point of view, not just correlated with the most productive stocks in the region. • The indicator stocks used have been reviewed and found to be scientifically defensible and appropriate by the Pacific Stock Assessment Review Committee or the appropriate Pacific Salmon Commission technical committee. • There is general agreement among regional fisheries scientists outside the management agency that the indicator stocks are appropriate. • The relationships between indicator stocks and stocks of interest are assessed every three to five years. 80 Scoring Guidepost

	• There is general agreement among regional fisheries scientists within the management agency that the status of indicator stocks reflects the status of other stocks within the management unit. • There is no significant scientific disagreement regarding the indicator stocks used by the management agency to formulate management decisions for the fishery. 60 Scoring Guidepost • There is no significant scientific disagreement regarding the indicator stocks used by the management agency to formulate management decisions for the fishery. • There is a scientific basis for the indicator stocks used in the management of the fishery. **SCORE 70** The management agency's detailed submission for Fraser sockeye (DFO Fraser 2003a, p.14) suggested that a score of 90 was appropriate for this indicator. Wilson (2005) suggested that one of the 80 guide posts was not met. While there is not complete agreement among regional fisheries scientists outside the management agency regarding the adequacy of the indicator stocks for formulating management decision, there does not appear to be significant disagreement regarding the stocks used. However, there remains a need to assess the degree to which these stocks represent the status of the other stocks within each management unit (i.e. run timing group). Hence, the two evaluation criteria under SG 80 have not been fully met and the Team's score was 70.
DFO Action Plan	Canada's Wild Salmon Policy (June 2005) and its implementation over the next few years requires the identification of Conservation Units (CUs), conservation benchmarks and monitoring systems to assess status of individual CUs. The current state of each CU within management units will be evaluated to assess status in order to meet the WSP objective of maintaining biodiversity. The management of Fraser River sockeye now routinely uses state-of-the-art DNA stock identification techniques. This reduces the uncertainty in stock composition estimates of CUs in each management unit. For example, Cultus Lake sockeye are severely depressed and cannot be sampled representatively in mixed stock fisheries. The choice of indicator stocks to represent the Cultus Lake sockeye has been agreed upon by the Pacific Salmon Commission and the Fraser River Panel Technical Committee. To satisfy this condition DFO in conjunction with Pacific Salmon Commission staff will summarize existing information on choice of indicator stocks used to reflect the status of other stocks within each management unit. This information will be provided in a written review to the MSC certifying body by June, 2010.
Observations from 1st Surveillance	In 2010, Fisheries and Oceans published "*Guidelines for applying updated methods for assessing harvest rules for Fraser River sockeye salmon (Oncorhynchus nerka)*." This Science Advisory Report resulted from a Fisheries and Oceans Canada, Canadian Science Advisory Secretariat Pacific Regional Advisory Meeting. The Fraser River Sockeye Spawning Initiative (FRSSI) has been an eight-year process to develop guidelines for setting annual escapement and exploitation targets for Fraser Sockeye Salmon stocks. The initiative began in early 2002, and has since evolved through a series of workshops and on-going feedback from stakeholders. A quantitative modeling tool used to support the planning process was developed and reviewed by the Pacific Science Advice Review Committee (PSARC) in 2003. The model has evolved substantially since that time. The simulation model supports the evaluation of alternative management strategies, such as target levels of total allowable mortality that change with run size. These management strategies shape preseason fishing plans, guide in-season management decisions, and provide a reference point for postseason review. (DFO, 2010). Among other conclusions, the report states: Simulating spawners and recruits for 19 stocks is the most detailed practical level of biological resolution in the population dynamics. While additional life history stages (e.g. smolts) or additional mechanisms (e.g. ocean conditions during first entry) could be incorporated for some stocks, this could not be consistently applied across all stocks. Estimating population dynamics for smaller population groups (e.g. conservation units) is

	not currently feasible, because recruitment estimates are not available at that resolution. DFO contends that the status assessment and management of Fraser sockeye are not based on indicator stocks: • Estimates of spawner abundance form the basis for any status assessment, and are available from over 250 distinct sampling sites throughout the watershed (nuSEDS). • These sites are grouped for different management purposes (forecasting, harvest planning) • 19 intensively monitored stocks with Spawner-Recruit data are distributed geographically throughout the region and they span a broad range of abundances, productivities (R/S), and patterns over time. • These 19 "intensively monitored stocks" usually represent more 95% of the total spawner abundance for Fraser sockeye. • Harvest decisions consider all the stocks, not just the 19 stocks with spawner-recruit models. The AT recognizes that DFO monitors virtually all of the spawning locations for Fraser sockeye and thus has information on escapement trends for most Fraser sockeye CUs. However, fishing plans and fisheries are managed using run timing, in-season abundance estimates and productivity estimates for the 19 intensively monitored "indicator" or "modeled" stocks. The most important point is that these "modeled" stocks represent the vast majority of Fraser sockeye and include both small and large stocks from all portions of the Fraser watershed.
Conclusion from 1st Surveillance Report	**The recent CSAS working report on Fraser Sockeye (Grant et al. 2010) and CSAS peer review process has provided evidence that the two scoring guideposts at the 80 level have been met. Thus, the scoring for this indicator has been raised to 80 and the condition closed out.**

Condition 3	Certification is conditional until the harvest rate analysis for Sakinaw sockeye has been updated using the best available data from the Pacific Salmon Commission sockeye run reconstruction analyses and appropriate fisheries management actions are consistent with the goal of reducing harvest rates for Sakinaw sockeye and rebuilding this depleted stock, within one year. (**Fraser Condition #1.3**)
Assessed Activity	This Condition relates to Indicator 1.1.2.1 PI: Estimates exist of the removals for each stock unit. 100 Scoring Guidepost • Catch estimates are available for all fisheries in Canadian waters that harvest the target and non-target stocks harvested in the fishery being evaluated. • Mortality rates are available for the fish released or discarded during the fishery. • Catch estimates are available for fisheries outside Canadian waters that harvest the stocks that are the target of the fishery being evaluated. 80 Scoring Guidepost • Catch estimates are available for all target stocks harvested in the fishery. • Catch estimates are available for non-target stocks where the catch of the non-target stock may represent a significant component of the harvest of that stock. • Mechanisms exist to ensure accurate catch reporting and these mechanisms are evaluated at least once every 5 years. 60 Scoring Guidepost • Catch estimates for the majority of target stocks are available. • Catch estimates are available for non-target stocks where the catch of the non-target stocks may represent a significant component of that stock. • Mechanisms exist to ensure accurate catch reporting and these mechanisms are evaluated at least once every 10 years. **SCORE 73** The management agency's detailed submission for Fraser sockeye (DFO Fraser 2003a, p.18) suggested that a score of 100 was appropriate for this indicator. Wilson (2005) suggested that one of the 60 scoring guidepost was not met because harvests of non-Fraser sockeye stocks "are not directly estimated". The Team found that current catch estimates and fisheries management guidelines for Sakinaw sockeye are based on preliminary analyses that require further review and refinement. Two of the 80 guideposts were not met so the Team's score was 73.
DFO Action Plan	Reconstructed estimates of recent harvest rates on Sakinaw sockeye have been completed. Actions have been taken to protect Sakinaw sockeye and estimates of harvest rates have declined substantially in recent years. This information will be made available to the appropriate MSC certifying body for their review by September, 2010.
Observations from 1st Surveillance	See stated observations for Condition 1.
Conclusion from 1st Surveillance Report	**DFO has reviewed the run timing and harvest rates for Sakinaw sockeye and the best available estimates indicate that exploitation rate for Sakinaw sockeye in Fraser sockeye fisheries have been very low in recent years. Given the almost complete closure of commercial fisheries for Fraser sockeye from 2007-09 and the substantial fisheries for Fraser sockeye in 2010, the evaluation of this indicator is differed until the 2nd surveillance audit when exploitation rates for 2010 Fraser sockeye fisheries will be available.** **During the next surveillance audit, the team will verify whether the fishery management plan has been successful at minimizing the rate on Sakinaw sockeye.**

Client Progress 2nd Surveillance	An estimate of the 2010 and 2011 exploitation rates for Sakinaw sockeye was provide in a eight page report prepared by Michael Folkes (2 May 2012). This report was an incomplete draft with several dates missing related to fence count operations and statements indicating that the author has concerns that the 2010 exploitation rate is an underestimate of the actual value. The run timing for the 2010 estimate was based on data from a return of only 29 sockeye whereas the 2011 run timing was derived from a return of 555 sockeye. The 2011 run timing was fairly consistent with the historical run timing data with the migration through Johnstone Strait extending through mid-August. In contrast, the minimal 2010 data does not include any returns after the end of July. Given the much more substantial fishery in 2010 than 2011 and PSC estimates of the Johnstone Strait harvest rates for sockeye exceeded 80% for a few days in early August and could have removed any returning Sakinaw sockeye. Consequently, the AT suggested that DFO provide an exploitation rate estimate for 2010 based on the 2011 or historical average run timing for Sakinaw sockeye.
Observations from 2nd Surveillance	As indicated for Condition 1: The assessment team (AT) has identified concerns regarding the 2010 exploitation rate estimates for Sakinaw sockeye. Folkes states in his 2 May 2012 document that "based on knowledge of historical run timing, it is likely that the 2010 run timing estimate is not representative and the calculated exploitation rate is an underestimate of the actual value". In order to evaluate the status of this condition, the AT requires a scientifically defensible estimate of the 2010 exploitation rate for Sakinaw sockeye.
Conclusion from 2nd Surveillance Report	Based on the information presented to date, the team's conclusion is that the requirements of Condition 3 have not been met. The AT concluded that this condition is behind target as it was not met on the agreed schedule. As such, the AT have specified an additional milestone and deliverable timeframe in keeping with the requirements defined by the MSC Certification Requirements, version 1.2, Section 27.22, subnote 116: *Those fisheries who signed a certification contract prior to 7 February 2011 may apply the following in place of 27.22.8.1 b i:* *If progress against an interim milestone is judged to be behind target, the CAB shall specify the remedial action required, and if relevant, further milestones and scores to be achieved, and the time frame by which the milestone shall be achieved.* The AT indicated that a 2010 estimate based on average historical or 2011 run timing would be more scientifically defensible than the 2010 estimates provided in the Folkes (2012) document. Based on the information presented to date, the team's conclusion is that the requirements of Condition 3 have not been met. The client is to provide a scientifically defensible Sakinaw exploitation rate estimate for 2010 by the 3rd surveillance audit.

Condition 4	Certification is conditional until a review of the relative productivity of Sakinaw sockeye has been completed and the fisheries management plan is consistent with the estimated productivity and goal of rebuilding the Sakinaw sockeye stock, within one year (**Fraser Condition #1.4**).
Assessed Activity	This Condition relates to Indicator 1.1.2.4 PI: The information collected from catch monitoring and stock assessment programs is used to compute productivity estimates for the target stocks and management guidelines for both target and non-target stocks. 100 Scoring Guidepost • Scientifically defensible productivity estimates (e.g. stock/recruitment relationships) have been derived for all target stocks and the relative productivity of non-target stocks is known. • Risk assessment has been conducted to determine the impact of alternative harvest strategies on non-target stocks. The risk assessment should include an assessment of the uncertainties with estimates of stock productivity for both the target and non-target stocks. 80 Scoring Guidepost • There is adequate information to identify the harvest limitations and production strategies required to maintain the high productivity of the target stocks. • There is adequate information to estimate the relative productivity of the non-target stocks

	where the fishery harvests may represent a significant component of those non-target stocks. • The harvest limitations for target stocks take into consideration the impacts on non-target stocks and the uncertainty of the productivity for these stocks. 60 Scoring Guidepost • The available information and analyses are adequate to identify the harvest limitations and production strategies required to maintain the productivity of the majority of target stocks. • The relative productivity of the non-target stocks is considered in the management strategy, where the fishery harvests may represent a significant component of those non-target stocks. **SCORE 73** The management agency's detailed submission for Fraser sockeye (DFO Fraser 2003a, p.25) suggested that a score of 90 was appropriate for this indicator. Wilson (2005) suggested that one of the 60 scoring guidepost was not met because there are "no harvest guidelines in place to protect the 13 non-target stocks that are harvested during fisheries for Fraser sockeye". The Team found that were harvest guidelines in the IFMP that were developed for the protection of these non-target stocks but information on the productivity of the Sakinaw stock relative to co-migrating Fraser sockeye stocks needs to be assess and harvest rates adjusted accordingly. The Team's score was 73.
DFO Action Plan	Estimates of relative productivity for Sakinaw sockeye have been completed. Estimates of marine survival rates in recent years have been very low. Harvest rate reductions in conjunction with enhancement and habitat improvements have been implemented by DFO in an attempt rebuild Sakinaw sockeye. This information will be made available to the appropriate MSC certifying body for their review by September, 2010.
Observations from 1st Surveillance	It is clear from the returns to Sakinaw Lake in recent years that the natural productivity of this sockeye stock is very low. Concerns regarding Sakinaw sockeye and other inner south coasts non-Fraser sockeye stocks have been taken into account in the management plans for fisheries targeting the more productive and abundant Fraser sockeye stocks. DFO's update on Sakinaw sockeye recovery dated 9 May 2011 provides information on each of the approaches and actions to achieve the goals and objectives of Sakinaw sockeye. A conservation strategy for Sakinaw sockeye was completed in 2005 and is available on the DFO website at the following address (http://www.pac.dfo-mpo.gc.ca/species/salmon/sakinaw_sockeye_cs/default_e.htm). The 2010 Integrated Fisheries Management Plan Salmon: Southern B.C defines the specific measures used to control fisheries impacts on returning Sakinaw sockeye. In particular, the IFMP states: Most fisheries that have potential to intercept Sakinaw Lake sockeye will continue to be delayed prior to the last week of July to ensure a significant portion of the return has passed through major fisheries in Johnstone Strait. The plan will provide for: · Restrictions in First Nations FSC fisheries prior to the last week of July. · Recreational fisheries in Queen Charlotte Strait, Johnstone Strait, and upper Strait of Georgia will be closed to sockeye retention prior to the last week of July. The waters near the mouth of Sakinaw Creek in Area 16 will be closed to fishing all season. In addition, there will be sockeye non-retention restrictions in Area 16 until early to mid August at which time sockeye retention opportunities are expected to be available in Sabine Channel. · Commercial fisheries in Queen Charlotte Strait and Johnstone Strait will be closed prior to the last week of July, and upper Strait of Georgia (including Sabine Channel) until early to mid August.
Conclusion from	**Based on the information provided by DFO in their Sakinaw sockeye update and recent**

1st Surveillance Report	**IFMPs, all three of the 80 level scoring guideposts have been met and the score for this indicator has been raised to 80 and Condition closed out.**

Condition 5	Certification is conditional until the Conservation Units have been defined for Fraser sockeye using the methods described in Holtby and Ciruna (2007) and LRP's for each Fraser sockeye conservation unit are defined and peer reviewed, within two years. (**Fraser Condition #1.5**).
Assessed Activity	This Condition relates to Indicator 1.1.3.1. PI: Limit Reference Points or operational equivalents have been set and are appropriate to protect the stocks harvested in the fishery. 100 Scoring Guidepost • The Limit Reference Point for target species have been reviewed and found to be scientifically defensive and appropriate by the Pacific Scientific Advice Review Committee or the appropriate Pacific Salmon Commission technical committee. • There is general agreement among regional fisheries scientist outside the management agency that the LRP's are appropriate. • There is general scientific agreement regarding the LRP's for non-target species. 80 Scoring Guidepost • There is some scientific basis for the LRP's for target stocks and these LRP's are defined to protect the stocks harvested by the fisheries. • There is no significant scientific disagreement regarding the LRP's used by the management agency to formulate management decision for the fishery. 60 Scoring Guidepost • There is general agreement among regional fisheries scientist within the management agency that the LRP's or equivalent are appropriate to achieve the management goals for target stocks. **SCORE 70** The management agency's detailed submission for Fraser sockeye (DFO Fraser 2003a, p.27-28) suggested that a score of 80 was appropriate for this indicator. Wilson (2005) questioned if the 60 scoring guidepost was met because "conservation units can decline within an aggregate even though the aggregate is meeting or exceeding the escapement goal". The Team found that the management agency has operational LRPs for the 19 Fraser sockeye indicator stocks and is in the process of defining LRPs for Fraser sockeye stocks in order to implement the WSP. Bradford and Wood (2004) provide the scientific basis for setting minimum population sizes and recovery objectives for Cultus and Sakinaw sockeye stocks. The Team's score was 70.
DFO Action Plan	To satisfy these conditions DFO will fully implement 'Strategy 1' of our WSP. 'Strategy 1' of the WSP requires standardized monitoring of wild salmon status, including identification of upper and lower benchmarks to represent biological status and guide harvest decisions. Implementing this strategy requires identification of Conservation Units (CUs)6 for salmon: the scale at which the WSP aims to maintain biodiversity and at which benchmarks (LRPs and TRPs) will be defined. There are various definitions of lower and target reference points in relation to resource management. In the context of the WSP, The lower benchmark (LRP) will be established at a level high enough to ensure there is a substantial buffer between it and being considered at risk of extinction by COSEWIC. As defined in the WSP: "the buffer will account for uncertainty in data and control of harvest management. There is no single rule to use for determination of the lower benchmark. Rather, it will be determined on a case by-case basis, and depend on available information, and the risk tolerance applied…." The upper benchmark (TRP) will be established to identify whether harvests are greater or less than the level expected to provide, on an average annual basis, the maximum annual catch for a CU, given existing environmental conditions.

Observations from 1st Surveillance	Progress has been made. Working Paper 2010/P14 for CSAS (Fraser Sockeye (*Oncorhynchus* nerka) Wild Salmon Policy Evaluation of Stock Status: State and Rate by Grant et al. 2010) has provided the first key steps towards clarification to the CUs for Fraser sockeye. Further work is required both within and outside DFO to reach consensus on the CUs and LRPs for Fraser sockeye.
Conclusion from 1st Surveillance Report	**Given progress to date, the Assessment Team (AT) expected that the management agency will meet the requirements of the 80 level guideposts within the required time frame of 2 years.**
Client Progress 2nd Surveillance	DFO has provided a CSAS report (Grant et al. 2011) as evidence of the progress being made toward setting the lower and upper benchmarks for Fraser sockeye CUs. Sue Grant confirmed that these benchmarks are established as 4 year averages to assess stock status for each conservation unit (CU) over a 4 year period under the WSP. These benchmarks are not equivalent to the LRPs and TRPs (annual management benchmarks) needed to make decisions regarding fishery openings and closures. These 4-year average WSP benchmarks are not informative for the management of highly cyclic stocks which represent several of the largest stocks in the Fraser watershed.
Observations from 2nd Surveillance	The AT requested that DFO provide a clear list of the LRPs and TRPs for each Fraser sockeye CU and define the relationship between the WSP 4-year average benchmarks and these LRPs and TRPs.
Conclusion from 2nd Surveillance Report	Conservation units have been defined for Fraser sockeye, thus meeting the first requirement of Condition 5. LRP's have yet to be defined for each Fraser sockeye CU. Based on the information presented to date, the team's conclusion is that the requirements of Condition 5 have not been met. The AT concluded that this condition is behind target as it was not met on the agreed schedule. As such, the AT have specified an additional milestone and deliverable timeframe in keeping with the requirements defined by the MSC Certification Requirements, version 1.2, Section 27.22, subnote 116: *Those fisheries who signed a certification contract prior to 7 February 2011 may apply the following in place of 27.22.8.1 b i:* *If progress against an interim milestone is judged to be behind target, the CAB shall specify the remedial action required, and if relevant, further milestones and scores to be achieved, and the time frame by which the milestone shall be achieved.* DFO has not provided clearly defined LRPs for Fraser sockeye CUs necessary to meet the requirements of the 80 scoring guideposts for this Condition within the required time frame of 2 years. Therefore, this condition remains in place and must be met by the 3rd surveillance audit.

Condition 6	Certification is conditional until the Management Units have been defined for Fraser sockeye and the management agency defines the TRP's for each Fraser sockeye management unit taking into account the productivity of target and non-target stocks within each management unit, by May 2012. (**Fraser Condition #1.6**).
Assessed Activity	This Condition relates to Indicator 1.1.3.2. PI: Target Reference Points or operational equivalent have been set. 100 Scoring Guidepost • The Target Reference Point (TRP) for target species have been reviewed and found to be scientifically defensive and appropriate by the Pacific Scientific Advice Review Committee or the appropriate Pacific Salmon Commission technical committee. • There is general agreement among regional fisheries scientist outside the management agency that the TRP's are appropriate. • The TRP's for the target stocks take into account variability in the productivity of each component of the target stock and productivity of non-target stocks. 80 Scoring Guidepost • There is no significant scientific disagreement regarding the TRP's used by the

	management agency to formulate management decision for the fishery. • The TRP's for the target stocks take into account variability in the productivity of each component of the target stock and the productivity of non-target stocks. 60 Scoring Guidepost • There is general agreement among fisheries scientist within the management agency that the TRP's are appropriate for the target stocks. • Target reference points have been defined for the majority of target stocks harvested in the fishery and these target reference points are not scientifically disputed. • The management agency has taken into account the relative productivity of non-target stocks when setting the TRP's for the majority of target stocks. **SCORE 70** The management agency's detailed submission for Fraser sockeye (DFO Fraser 2003a, p.29) suggested that a score of 100 was appropriate for this indicator. Wilson (2005) indicated that two of the 60 scoring guidepost were not met because he questioned if "the escapement goals set for the four timing aggregates of Fraser sockeye are the operational equivalent of TRPs". The Team found that the fixed escapement goals at low run size set for each of the four run-timing aggregates qualified as operational equivalents of TRPs that have been set relatively low because of concerns regarding the differential productivity of stocks within these timing groups. The Team recognizes that there continues to be considerable scientific debate regarding the TRP's for both target and non-target stocks. It is anticipated that the implementation of the WSP will provide a clear definition of the TRP's for Fraser sockeye. A score of 70 was awarded.
DFO Action Plan	To satisfy these conditions DFO will fully implement 'Strategy 1' of our WSP. 'Strategy 1' of the WSP requires standardized monitoring of wild salmon status, including identification of upper and lower benchmarks to represent biological status and guide harvest decisions. Implementing this strategy requires identification of Conservation Units (CUs)6 for salmon: the scale at which the WSP aims to maintain biodiversity and at which benchmarks (LRPs and TRPs) will be defined. There are various definitions of lower and target reference points in relation to resource management. In the context of the WSP, The lower benchmark (LRP) will be established at a level high enough to ensure there is a substantial buffer between it and being considered at risk of extinction by COSEWIC. As defined in the WSP: "the buffer will account for uncertainty in data and control of harvest management. There is no single rule to use for determination of the lower benchmark. Rather, it will be determined on a case by-case basis, and depend on available information, and the risk tolerance applied…." The upper benchmark (TRP) will be established to identify whether harvests are greater or less than the level expected to provide, on an average annual basis, the maximum annual catch for a CU, given existing environmental conditions.
Observations from 1st Surveillance	Progress has been made. Working Paper 2010/P14 for CSAS (Fraser Sockeye (*Oncorhynchus* nerka) Wild Salmon Policy Evaluation of Stock Status: State and Rate by Grant et al. 2010) has provided the first key steps towards clarification to the CUs for Fraser sockeye. Further work is required both within and outside DFO to reach consensus on the CUs and TRPs for Fraser sockeye.
Conclusion from 1st Surveillance Report	**Given progress to date, the AT expected that the management agency will meet the requirements of the 80 level guideposts within the required time frame of 2 years.**
Client Progress 2nd Surveillance	As indicated for Condition 5: DFO has provided a CSAS report (Grant et al. 2012) as evidence of the progress being made toward setting the lower and upper benchmarks for Fraser sockeye CUs. Sue Grant confirmed that these benchmarks are being established as 4 year averages to assess stock status for each CU over a 4 year period under the WSP. These benchmarks are not equivalent to the LRPs and TRPs (annual management benchmarks) needed to make decisions regarding fishery openings and closures. These 4-year average WSP benchmarks are not informative for the management of highly cyclic stocks which represent several of the largest stocks in the Fraser watershed.
Observations	The AT requested that DFO provide a list of the TRPs for each Fraser sockeye CU and define

from 2nd Surveillance	the relationship between the WSP 4-year average for the upper benchmarks and the TRPs for each sockeye CU taking into account the productivity of target and non-target stocks within each management unit.
Conclusion from 2nd Surveillance Report	Conservation units have been defined for Fraser sockeye, thus meeting the first requirement of Condition 6. TRP's have yet to be defined for each Fraser sockeye CU. Based on the information presented to date, the team's conclusion is that the requirements of Condition 6 have not been met. The AT concluded that this condition is behind target as it was not met on the agreed schedule. As such, the AT have specified an additional milestone and deliverable timeframe in keeping with the requirements defined by the MSC Certification Requirements, version 1.2, Section 27.22, subnote 116: *Those fisheries who signed a certification contract prior to 7 February 2011 may apply the following in place of 27.22.8.1 b i:* *If progress against an interim milestone is judged to be behind target, the CAB shall specify the remedial action required, and if relevant, further milestones and scores to be achieved, and the time frame by which the milestone shall be achieved.* DFO has not provided clearly defined TRPs for Fraser sockeye CUs necessary to meet the requirements of the 80 scoring guideposts for this Condition within the required time frame of 2 years. Therefore, this condition remains in place and must be met by the 3rd surveillance audit.

Condition 7	Certification is conditional until the management agency provides a clear commitment to implement the recovery plan for Cultus sockeye and evidence that fisheries management actions are consistent with the recovery goals for Cultus sockeye, within one year. (**Fraser Condition #1.7**).
Assessed Activity	This Condition relates to Indicator 1.2.1. PI: There is a well-defined and effective strategy, and a specific recovery plan in place, to promote recovery of the target stock within reasonable time frames. 100 Scoring Guidepost • There are comprehensive and pre-agreed responses to low stock size that utilize a range of management measures to ensure rapid recovery. • Stocks are allowed to recover to the TRP before commercial fisheries are permitted that target these stocks. • The management agency does not use artificial propagation as a substitute for maintaining or recovering wild stocks. 80 Scoring Guidepost • In the event of severe depletion, recovery plans are developed and implemented to facilitate the recovery of the depleted stocks with 3 reproductive cycles. (*SCS Intent – Although this indicator was set for use in salmon fisheries, the cyclic nature of the runs within the Fraser River system require that this statement is interpreted within the context of the cyclic aspects of the Fraser, and not just as 3 reproductive cycles of the species.*) • Stocks are allowed to recover to more than 150% of the LRP for abundance before any fisheries are permitted that target these stocks. 60 Scoring Guidepost • In the event of severe depletion, recovery plans are developed and implemented to facilitate the recovery of the depleted stocks within 5 reproductive cycles • Stocks are allowed to recover to more than 125% of the LRP for abundance before any fisheries are permitted that target these stocks. **SCORE 70** The management agency's detailed submission for Fraser sockeye (DFO Fraser 2003a, p.31) suggested that a score of 75 was appropriate for this indicator. Wilson (2005) indicated that one of the 60 scoring guidepost was not met because "DFO has no clear strategy for protecting and rebuilding individual stocks or CU's that decline consistently within an aggregate where

	the aggregate goals are still being met". Cultus sockeye is an example of a severely depleted target Fraser sockeye stock within one of the run-timing aggregates where DFO does have a strategy for protecting and rebuilding the stock. However, the Team found that there were significant concerns regarding the implementation of the recovery plan for Cultus sockeye. The Team's score was 70.
DFO Action Plan	A conservation strategy has been completed for Cultus Lake sockeye (http://www.pac.dfompo.gc.ca/species/salmon/cultus_sockeye_cs/documents/Cultus_Conservation_Strategy_Feb08_e.pdf.). Specific actions are already underway to recover Cultus sockeye Lake sockeye. They include control of exploitation through conservation-oriented fishing plans, population assessment, a captive breeding project, research on the cause of early migration and high pre-spawn mortality, assessment of littoral habitat and the Columbia Valley aquifer, an investigation of adult migratory timing using acoustic tag, studies on the impact of predation and control projects for pike minnow and Eurasian water milfoil, and awareness materials including a brochure for the general public. DFO has already demonstrated a clear commitment to implement a rebuilding plan for Cultus Lake sockeye with fishery management actions that are consistent with the rebuilding goals for Cultus Lake sockeye that are identified in the conservation strategy. A report summarizing how DFO actions are consistent with the rebuilding goals for Cultus sockeye will be developed. This report will be made available to the appropriate MSC certifying body for their review by December, 2010.
Observations from 1st Surveillance	DFO has confirmed their commitment to implementing the recovery plan for Cultus sockeye, as evidenced on the Cultus Lake Sockeye Recovery Program website (http://www.pac.dfo-mpo.gc.ca/science/habitat/cultus/sockeye-rouge-eng.htm). Fishery management actions regarding protection of Cultus sockeye are clearly defined in the IFMPs. Fishery restrictions are defined to protect Cultus and Late Run sockeye. The Cultus exploitation rate in 2010 will likely higher than the 20-30% ER target range proposed for 2010, however, the escapement from fisheries exceeded the short-term Cultus escapement objective. Suspected high pre-spawn mortality in 2010 may have substantially reduced the number of effective female spawners. The degree of spawning success will not be known until the smolts are enumerated as their leave Cultus Lake in the spring of 2012. Fraser sockeye fisheries conducted in 2010 during the migration period for Cultus sockeye were targeting the late-run Shuswap sockeye and any Cultus sockeye caught during these fisheries were considered to be bycatch (i.e. harvest of a non-target stock) for the 2010 Fraser sockeye fishery.
Conclusion from 1st Surveillance Report	**Given DFO's progress towards the recovery objectives for Cultus sockeye and protection of Cultus fish within the IFP, the team considers that both of the 80 level scoring guideposts have been met and the score for this indicator has been raised to 80. The condition is closed out.**

Condition 8	Certification is conditional until the management agency defines the LRP's for the target stocks and the management agency provides documentation that fisheries have not resulted in escapements that approach or are below the LRP in more than one year in a period of the most recent 5 cycle years, for any of the target sockeye stocks. The intent for this condition is to resolve the effects of fisheries, not other factors, on the stock and to recognize that the Fraser River sockeye undergo cycles so that these cycles must also be taken into account when examining whether the stocks are being maintained above LRPs. This condition should be addressed within two years (**Fraser Condition #1.8**).
Assessed Activity	This Condition relates to Indicator 1.2.2. PI: Target stocks are not depleted and recent stock sizes are assessed to be above appropriate limit reference points for the target stocks. In contrast to Indicator 1.2.1, which evaluates the strategy for stock recovery, this indicator evaluates the current status of the target species or stocks, and the basis for being reasonably

	certain about their status. The Scoring Guideposts are arranged hierarchically, so that evaluation of the current status depends on the assessment, which in turn depends on data and knowledge about the stocks and the fishery. 100 Scoring Guidepost • There is general agreement among regional fisheries scientist outside the management agency that the methods of estimating escapements and exploitation rates for the target stocks are scientifically defensible. • Management actions have reduced fishing as the target stocks approach the LRP and fisheries have only resulted in escapements that approach or are below the LRP escapement goal in one year in a period of the most recent 10 consecutive years, for any of the target stocks. 80 Scoring Guidepost • There is general agreement among regional fisheries scientist inside the management agency that the methods of estimating escapements and exploitation rates for the target stocks are scientifically defensible. • Management actions have reduced fishing as the target stocks approach the LRP and fisheries have only resulted in escapements that approach or are below the LRP escapement goal in one year in a period of the most recent 5 consecutive years, for any of the target stocks. 60 Scoring Guidepost • There is general agreement among regional fisheries scientist inside the management agency that the methods of estimating escapements and exploitation rates for the majority of target stocks are scientifically defensible. • Management actions have reduced fishing as the target stocks approach the LRP and fisheries have only resulted in escapements that approach or are below the LRP escapement goal in no more than two years in a period of the most recent 5 consecutive years, for the majority of the target stocks. **SCORE 75** The management agency's detailed submission for Fraser sockeye (DFO Fraser 2003a, p.33) suggested that a score of 90 was appropriate for this indicator. Wilson (2005) indicated that one of the 80 scoring guidepost was not met because of the concerns regarding the "health of component CUs or stocks" within a run timing group. In 2009, concerns were raised regarding the current status of Fraser sockeye relative to the interim LRPs defined for the target stock groups. Consequently, the new section on "Stock Status and Trends was added to the report (Section 8). The trend plots for Fraser sockeye show that the 4yr average escapement has been above the Low Escapement Benchmark (LEB) for all run-timing groups except Early Stuart sockeye. The 4yr average escapement for Early Stuart sockeye has been below its LEB of 108,000 in four of the past five years. While this LEB is believed to be a relatively high LRP, management actions have reduced fishing in years when returns for the Early Stuart target stock approach the LEB and no commercial fisheries have been permited to target Early Stuart sockeye in each of the four recent years where the 4 yr average escapement has dropped below the LEB line. A few First Nation's have been allowed to harvest Early Stuart sockeye for FSC purposes in these years and these harvests have been factored into the LEB for this run-timing group. Since commercial fisheries have not resulted in escapements that approach or are below the LEB escapement goal in any years in a period of the most recent 5 consecutive years, the Fraser sockeye fishery passed the 60 guideposts for Early Stuart and other run-timing groups. The new Stock Status and Trends Section 8 provides some of the information required for Condition 8, however, formal LRPs have not been defined for each of the target stocks for the Fraser sockeye fishery. The management agency has made considerable progress towards the definition of LRPs over the past few years so it should be possible to address Condition 8 within one year of the certification date. The Team's score was 75 for this indicator.
DFO Action Plan	To satisfy these conditions DFO will fully implement 'Strategy 1' of our WSP. 'Strategy 1' of

	the WSP requires standardized monitoring of wild salmon status, including identification of upper and lower benchmarks to represent biological status and guide harvest decisions. Implementing this strategy requires identification of Conservation Units (CUs)6 for salmon: the scale at which the WSP aims to maintain biodiversity and at which benchmarks (LRPs and TRPs) will be defined. There are various definitions of lower and target reference points in relation to resource management. In the context of the WSP, The lower benchmark (LRP) will be established at a level high enough to ensure there is a substantial buffer between it and being considered at risk of extinction by COSEWIC. As defined in the WSP: "the buffer will account for uncertainty in data and control of harvest management. There is no single rule to use for determination of the lower benchmark. Rather, it will be determined on a case by-case basis, and depend on available information, and the risk tolerance applied…." The upper benchmark (TRP) will be established to identify whether harvests are greater or less than the level expected to provide, on an average annual basis, the maximum annual catch for a CU, given existing environmental conditions.
Observations from 1st Surveillance	Clearly, LRPs or their operational equivalent (Lower Benchmarks) must be defined before the management of Fraser sockeye fisheries can be evaluated against these LRPs. Working Paper 2010/ P14 for CSAS (Grant et al. 2010) has provided the first key steps towards clarification to the CUs and LRPs for Fraser sockeye. Further work is required both within and outside DFO to reach consensus on the CUs and LRPs for Fraser sockeye.
Conclusion from 1st Surveillance Report	**Given progress to date, the AT expects that the management agency will meet the requirements of the 80 guideposts within the required time frame of 2 years.**
Client Progress 2nd Surveillance	As indicated for Condition 5: DFO has provided a CSAS report (Grant et al. 2012) as evidence of the progress being made toward setting the lower and upper benchmarks for Fraser sockeye CUs. Sue Grant confirmed that these benchmarks are being established as 4 year averages to assess stock for each CU over a 4 year period under the WSP. These benchmarks are not equivalent to the LRPs and TRPs (annual management benchmarks) needed to make decisions regarding fishery openings and closures. These 4-year average WSP benchmarks are not informative for the management of highly cyclic stocks which represent several of the largest stocks in the Fraser watershed. In addition to the above, LRPs are needed to determine whether management actions have reduced fishing of target stocks as they approach the LRP and fisheries have only resulted in escapements that approach or are below the LRP escapement goal in one year in a period of the most recent 5 consecutive years, for any of the target stocks.
Observations from 2nd Surveillance	The AT has requested that DFO provide a list of the LRPs and TRPs for each Fraser sockeye CU and define the relationship between the WSP 4-year average benchmarks and these LRPs and TRPs. Once the LRPs are defined, evidence must be provided that management actions have been consistent with the 2nd 80 SG.
Conclusion from 2nd Surveillance Report	Based on the information presented to date, the team's conclusion is that the requirements of Condition 8 have not been met. The AT concluded that this condition is behind target as it was not met on the agreed schedule. As such, the AT have specified an additional milestone and deliverable timeframe in keeping with the requirements defined by the MSC Certification Requirements, version 1.2, Section 27.22, subnote 116: *Those fisheries who signed a certification contract prior to 7 February 2011 may apply the following in place of 27.22.8.1 b i:* *If progress against an interim milestone is judged to be behind target, the CAB shall specify the remedial action required, and if relevant, further milestones and scores to be achieved, and the time frame by which the milestone shall be achieved.* DFO has not provided the clear definition of the LRPs for Fraser sockeye CUs needed to meet the requirements of the second SG80 guideposts for this Condition within the required time frame of 2 years. Therefore, this condition remains in place and must be met prior to the 3rd surveillance audit.

3.2 Fraser Conditions – Principle 2

Condition 17	Continued certification of the Fraser sockeye salmon fishery is contingent upon providing reasonable, reliable, and defensible estimates of the harvest of white sturgeon and steelhead within a reasonable time frame. See also Condition 1, 3, and 4 regarding Sakinaw sockeye, and the need to be able to identify and understand the impact of fish released from a supplementation program to assist in the recovery plan of Sakinaw sockeye and to be able to detect impacts on natural spawning produced returning adults. To be completed by May 2012. (**Fraser Condition 2.1**)
Assessed Activity	This Condition relates to Indicator 2.2.1. PI: The management of the fishery includes provisions for integrating and synthesizing new scientific information on biological diversity at the genetic, species or population level of all species harvested in the fishery and impacts on endangered, threatened, protected or icon species. The intent of this measure is to ensure that the management system incorporates available knowledge and considers the impacts of the fishery on biodiversity issues. This indicator includes the impacts of enhanced fishery harvests on these issues. 100 Scoring Guidepost • A risk assessment has been conducted, based on current knowledge of direct and incidental mortalities from the fishery, to ensure the fishery does not pose a significant threat to the biodiversity of the target or non-target species. • Stock composition including enhanced component, is known within Fishery Management Units with the likelihood of harvest of endangered, threatened, protected, or icon species has been estimated. • Time and area of migrations of weak year classes, sub-stock or population components are known. • The management system contains provisions to reduce harvests based on biodiversity concerns of affected endangered, threatened, protected or icon species, or weak year classes, of stocks, including the enhanced components, of the targeted species. 80 Scoring Guidepost • The fishery has been monitored and the stock composition is assessed with a special effort to determine presence of rare, endangered, protected, or icon species. • The management agency has a history of incorporating new research into management as new research data on impacts of fisheries on biodiversity become available. • The fisheries management system includes provisions for harvest reduction when biodiversity concerns are identified for target or non-target species. 60 Scoring Guidepost • Efforts are being made to assess the impacts of the fishery on the biodiversity of the endangered, threatened, and protected or icon species. • The impact of the fishery on endangered, threatened, and protected or icon species is identified and is considered in the management of fisheries. • There are provisions in the management system to reduce the impacts of the fishery on the biodiversity of the endangered, threatened, and protected or icon species. The DFO detailed submission for Fraser sockeye (DFO Fraser 2003b, p.16-22) suggested that a score of 95 was appropriate for this indicator, with partial scores on scoring elements 1 and 2 at the 100 scoring guidepost. At the 100 SG, we found no evidence of any risk assessment regarding steelhead, sturgeon and Sakinaw sockeye, nor was there evidence provided of stock composition of these species in the directed harvest that was credible. Evidence was provided that Sakinaw time and area historic harvests were known and an attempt was made to provide an estimate of the impact of the fishery on their harvests. The management system did contain provisions for limiting their harvests. We addressed the impacts on Cultus sockeye as a depleted target stock under Principle 1. Ken Wilson (2005) argued that Fraser sockeye fisheries are a dominant factor in the general

	decline and poor stock status of inside sockeye populations, with the Sakinaw stock now listed and prospect for recovery very poor. He maintains that Cultus remains at considerable risk, and harvest objectives are higher than desirable for the recovery of Cultus sockeye, and in every case in the last four years (2002 – 2005) these harvest limits set by DFO for harvest of Cultus sockeye were exceeded. He further argues that Fraser sockeye fisheries pose a significant risk to the biodiversity of both target and non-target socks. DFO's understanding of the impacts of Fraser fisheries on inside sockeye stocks is marginal, and limits the effective regulation of these fisheries. He also states that sockeye fisheries impact on endangered white sturgeon, but impacts have not been assessed. We agreed with DFO assessments at the 60 scoring guidepost, based on the work completed and submitted on Sakinaw and Cultus, along with the general provisions of the Wild Salmon Policy, that reasonable efforts were being made to assess impact on endangered, threatened, and protected or icon species, that the impacts were being considered in management and that there are provisions in the management plan to reduce impacts on these species. **SCORE 77** At the 80 scoring guidepost, we were provided with substantial evidence that the agency has a history of responding to information where biodiversity may be impacted and there are provisions in the management plan to limit the impact of the fisheries on non-target species of special interest. The first scoring guidepost at the SG80 was considered partially met because stock composition analysis is generally assessed and efforts have been made to identify the presence of depleted stocks in the fishery, including Cultus Lake sockeye. However the team did find deficiencies with regard to Sakinaw sockeye, sturgeon, and steelhead in that little or no direct action had been taken to provide data indicating the impact of the fishery on these species. There has apparently been no special effort to identify Sakinaw sockeye salmon in the fishery or to monitor white sturgeon bycatch, a species currently undergoing SARA review. Steelhead catches are also not well documented and many of the steelhead stocks in the region have been highly depleted. This resulted in a score of 77, primarily because of the deficiency in the monitoring of the fishery on Sakinaw sockeye, sturgeon, and steelhead.
DFO Action Plan	Programs are in place to estimate the number of sturgeon and steelhead encountered in fisheries directed at Fraser River sockeye. A mandatory release requirement for both of these species is in effect, therefore, estimates of releases are currently based on unverified reports of releases from fishery participants. In addition, several test-fisheries are conducted in the fishery area, which provide independent data on the presence and scope of any sturgeon and steelhead by-catch issues. Improving estimates of fishery impacts on these species would require the implementation of an on-board observer program to provide direct, validated, observations of encounters of steelhead and sturgeon. With sufficient funding, implementing an observer program would be feasible for fisheries with larger vessels. However, fisheries using smaller vessels (e.g. FN Economic Opportunity fisheries and approximately a third of the commercial fleet)) could not accommodate onboard observers. These fisheries could potentially be monitored with on water roving observers an approach which was piloted in the 2007 Area E chum fishery. New in 2007 Area E commercial fisheries also had census-based catch reporting programs, which should meet the 100% reporting requirement for sturgeon releases. Monitoring data to estimate the impact of Fraser River sockeye fisheries on sturgeon was not available in 2009 because there was no Area E Commercial Sockeye Fishery. Delayed delivery of a May 2012 report based on 2010 and 2011 fisheries monitoring is contingent on having commercial fisheries in 2010 and 2011. For consideration, to address the potential impacts on sockeye fisheries on sturgeon, an alternative approach could be to use Albion, Cottonwood and Whonnock sturgeon encounters as a proxy. To satisfy this condition DFO will develop a two year program (e.g. modelling, test fishery expansion, census based and/or observer based) to estimate the impact of Fraser River sockeye fisheries on steelhead and sturgeon beginning in 2010. The need for further work will be

	assessed according to the results of this program. A report summarizing the work will be completed in May 2012 and provided to the Certifier.
Observations from 1st Surveillance	The AT has not been provided any evidence of improvements to the catch monitoring systems for Fraser sockeye that would ensure that "reasonable, reliable, and defensible estimates of the harvest of white sturgeon and steelhead" are available within a reasonable time frame. For Sakinaw sockeye evaluations, see conditions 1, 3, 4 and 18.
Conclusion from 1st Surveillance Report	**This condition will be evaluated at the next surveillance audit.**
Client Progress 2nd Surveillance	DFO's submission to fulfil Conditions 17, 24 and 30 for the Fraser sockeye fishery was a two page memorandum from Matthew Parslow dated 27 April 2012. Table 1 in this memo provides a summary of sturgeon and steelhead catch estimates for sockeye –directed fisheries in the Fraser River for 2010 and 2011. The report indicates that the vast majority of the sturgeon caught in sockeye fisheries were reported released and these numbers are likely underestimates because they are based solely on fisher-reported data. In addition, there is no breakdown of the First Nation catch by gear type (set versus drift gillnet). With regard to Sakinaw sockeye, no information was provided by DFO on the potential impact of fish released from the supplementation program on the any remaining "wild" component of the Sakinaw sockeye population.
Observations from 2nd Surveillance	Research has documented very different survival rates for sturgeon caught using set gillnets versus drift gillnets (Robichaud et al. 2006). Given the lack of independent verification and gear type stratification in the First Nation food, social, ceremonial (FSC) and economic opportunity (EO) fishery data estimates of released sturgeon and steelhead, the 2010 and 2011 estimates provided in the Parslow memo do not constitute "reliable and defensible estimates of the catch of white sturgeon and steelhead. The method described in the Parslow memo are the same methods that have been used for years to monitor these fisheries and thus do not represent evidence of improvements to the catch monitoring system for Fraser sockeye fisheries. Since all sockeye releases from the supplementation program are marked and returns are counted at the Sakinaw fence, it should be possible for DFO to provide a reliable estimate of the portion of the annual returns that were from the supplementation program versus natural spawners.
Conclusion from 2nd Surveillance Report	Based on the information presented to date, the team's conclusion is that the requirements of Condition 17 have not been met. The AT concluded that this condition is behind target as it was not met on the agreed schedule. As such, the AT have specified an additional milestone and deliverable timeframe in keeping with the requirements defined by the MSC Certification Requirements, version 1.2, Section 27.22, subnote 116: *Those fisheries who signed a certification contract prior to 7 February 2011 may apply the following in place of 27.22.8.1 b i:* *If progress against an interim milestone is judged to be behind target, the CAB shall specify the remedial action required, and if relevant, further milestones and scores to be achieved, and the time frame by which the milestone shall be achieved.* As indicated for the 1st surveillance audit, the AT has not been provided any evidence of improvements to the catch monitoring systems for Fraser sockeye that would ensure that "reasonable, reliable, and defensible estimates of the harvest of white sturgeon and steelhead" are available within a reasonable time frame. This condition must be met by the third surveillance audit.

Condition 18	Fraser Sockeye Salmon Condition #2. Certification of the Fraser sockeye salmon fishery is contingent upon developing and implementing a risk assessment of the Sakinaw Lake recovery strategy that will include the following items: 1) Examination of the risk of differing temporal harvest rates on returning run and its implication on the probability of the recovery of the

	stock; and 2) Refinement and peer review of run reconstruction analyses for Sakinaw sockeye, both tasks to be completed within one year (**Fraser Condition 2.2)**
Condition 19	Fraser Sockeye Salmon Condition #3. Certification will be conditional until Limit Reference Points or their equivalent have been defined for Fraser sockeye salmon stocks, and recovery plans have been developed and implemented for stocks harvested in Fraser sockeye fisheries that are below their LRP. The proposed recovery plans must provide information regarding the probability of recovery and the timing for recovery. To be completed by May 2012. (**Fraser Condition 2.3)**
Assessed Activity	This Condition relates to Indicator 2.3.1. PI: Management strategies include provision for restrictions to the fishery to enable recovery of non-target stocks to levels above established LRPs (Limit Reference Points). 100 Scoring Guidepost • The management plans and escapement goals have been shown to have a high (>80%) probability of achieving a long-term recovery of depleted non-target stocks using risk analysis. • Historic data have been thoroughly examined to ensure fisheries restoration objectives are based on the likely habitat capacity, rather than on trends that cover only the most recent decades, thus avoiding the "moving baseline" syndrome. • Monitoring and assessment programs are established to determine with a high degree of confidence and in a timely manner that recovery is occurring. • Proposed management strategies have been reviewed and found to be scientifically defensible and appropriate by the Pacific Scientific Advice Review Committee or the appropriate Pacific Salmon Commission technical committee. • The management system supports the collection of data on non-fishing related human activity in the development of recovery plans for non-target stocks. 80 Scoring Guidepost • The management system includes assessment of plans for the recovery of non-target stocks to levels above established LRPs. • Objectives for recovery have at least some consideration of historic documents on stock abundance. • The management system has a reasonable (>60%) probability of achieving long-term recovery of depleted non-target stocks. • Monitoring and assessment programs are established to determine with a high degree of confidence and in a timely manner that recovery is occurring. • Escapement goals will be revised periodically to accommodate new data indicating success or failure of existing recovery plans. • The management system considers the impact of non-fishing related human activity in the development of recovery plans for non-target stocks 60 Scoring Guidepost • The management system attempts to prevent extirpation of non-target stocks and does have rebuilding strategies for the majority of the stocks. • The management system has at least a 50% probability of achieving long-term recovery of depleted non-target stocks. • The management system has a strategy for periodic revisiting escapement goals to respond to new data on recovery success or failure for the majority of the stocks. **SCORE 73** The management agency's detailed submission for Fraser sockeye (DFO Fraser 2003b, p.22-25) suggested that a score of 95 was appropriate for this indicator. Ken Wilson (2005) argued that LRP's for non–target stocks have generally not been established. He also stated that recovery of non-target inside sockeye stocks has never been addressed except for Sakinaw sockeye and that in the case of Sakinaw sockeye the impact of Fraser sockeye fisheries is not well understood. Further, he argues that DFO has not made provisions for restrictions to Fraser sockeye fisheries to enable the recovery of this stock, or

	other depleted inside sockeye stocks and that PSARC'S recommendations concerning the timing of Sakinaw sockeye through Fraser sockeye fisheries in Johnstone Strait have not been fully implemented. He also pointed out that recovery of both Sakinaw and Cultus sockeye remains highly uncertain particularly in light of Canada's decision not to protect these stocks under SARA. We agreed with many of Wilson's comments but agree with DFO scoring assessments at the 60 scoring guidepost, based on the work completed and submitted on Sakinaw and Cultus, along with the general provisions of the Wild Salmon policy. The exploitation rate of 10-12% that is currently used as a harvest limit to ensure the fishery does not impair recovery of the Sakinaw stock. Run reconstruction results were provided as evidence that exploitation rates have been below the harvest goal in 2004-05, however, we have concerns regarding the assumptions made and the appropriateness of these harvest rate estimates. Exploitation rates based on the observed escapement timing could be biased low but the very few fish that escape during the later portion of the run. Estimates of the exploitation rates should be based on average historical run-timing and harvest rates of the more abundant Fraser stocks that occur in the same fishery. In the absence of a risk analysis, low harvest rates should be imposed over a high proportion of the historical run timing to eliminate the possibility of the fishery inadvertently reducing returns or preventing the recovery of the later timed component of the run. It appears from the escapement timing information that the latter portion of the run has been reduced the most and consequently should receive at least equal conservation efforts. This is also of concern that because of the low numbers of fish returning, it is nearly impossible to directly measure exploitation rates specific to this stock and as a consequence there remains a high uncertainty as to what harvest rates actually are on the Sakinaw stock. The MSC scoring guidelines established for this indicator requires that to meet the 80 scoring guidepost, there should be at least a 60% probability that depleted stocks will recover. Based on the information provided to date for the Sakinaw sockeye stock, we believe that the fishery may still be a factor in the recovery of at least the latter half of the run. Although the recovery plan goes a long way in providing goals and procedures to ensure freshwater productivity is increased, in the absence of further risk analysis of the recovery strategy, we remain unconvinced that the current harvest policies and commercial closures have been adequately examined for their impact on the recovery of Sakinaw sockeye. Beyond Cultus and Sakinaw sockeye, there are other small salmon stocks in the area of targeted Fraser River sockeye stocks that have recently had reduced returns. Although we had limited information as to what role harvests have had on these reductions, their recent reductions parallel those of the Sakinaw and may have a common cause. The management entities as part of meeting the Wild Salmon Policy guidelines are expected to develop the functional equivalent of Limit Reference Points for these stocks and if necessary, develop similar analysis and recovery strategies as those developed for Cultus and Sakinaw. Although sockeye salmon stocks are of primary concern, depleted stocks of other species that are a significant bycatch in the sockeye salmon directed fishery also must be addressed. The Team found that all of the 60 scoring guideposts were met because DFO has taken measures to prevent the extirpation of non-target stocks and recovery plans have been developed for Sakinaw and Cultus sockeye that should promote the recovery of the majority of the depleted non-target stocks. While it is difficult to distinguish between a 50% probability of achieving long-term recovery at the 60 scoring level and a 60% at the 80 scoring level, the Team found that the management system has substantially reduced the impact of fisheries on non-target stocks in recent years and the fishery is no longer the major factor determining the recovery of these stocks. At the 80 scoring level, we found scoring elements 1,3,4 and 5 partially deficient because LRPs have not been defined for all non-target stocks, the probability of achieving long-term recovery of depleted non-target stocks is likely less than 60%; monitoring and assessment programs used to estimate harvest rates for Sakinaw sockeye must be improved; and escapement goals have yet to be defined for most non-target stocks. At the 100 level, we found that the agency used historic information for determining recovery objectives, scientific review from PSARC was used for development of management plans and evidence that non-fisheries information was used in the development of the recovery plans for Sakinaw and Cultus. There

	was no risk analysis of the recovery program for Sakinaw and the recovery plan did not provide sufficient detail to determine if the monitoring programs were to be sufficiently robust to determine if recovery was occurring or if commercial fishing impacts were minimal (partial score). Cultus was treated as a depleted target stock and has been addressed under Principle 1. This resulted in a score of 73, primarily because of an action plan for both implementation and monitoring to ensure the recovery plan was successful for Sakinaw sockeye.
DFO Action Plan	**Action Plan 18 -** Generic run reconstruction techniques are well developed and have been peer review by DFO's Pacific Scientific Advice Review Committee (PSARC). Uncertainty in the output of run reconstruction depends on the quality of input data and parameters. Refinement of key data inputs in the run reconstruction of Sakinaw sockeye have been completed (see Condition 1). The WSP also requires monitoring systems of CUs to assess status. Annual monitoring of the spawning escapements to Sakinaw sockeye is continuing to assess current rebuilding progress. Rebuilding has been severely impacted by prevailing low marine survival rates. DFO will complete a risk assessment of the Sakinaw Lake sockeye rebuilding plan and will assess implementation options within two years. **Action Plan 19** - The 80% scoring guidepost for Indicator 2.3.1 under the sockeye assessment tree requires that the management system "has a reasonable (>60%) probability of achieving long-term recovery of depleted non-target stocks." All BC sockeye fisheries received conditions related to this guidepost. However, it is our opinion that this scoring guidepost does not reflect the intent of the MSC standard. The newly standardized MSC assessment trees (2008) provide much needed guidance regarding the assessment of species fished as stock complexes, such as Pacific salmon. Specifically, species fished as stock complexes "may be considered analogous to multispecies target species considered under the guidance of performance indicator 2.1.1." This distinction is important because it allows for a pragmatic approach to the central problem of weak stock management, recognizing that factors other than harvest may cause a stock to decline. A non-target stock within the fishery may be below the point at which recruitment is impaired. *The critical factor for certification is whether or not the fishery is 'hindering' recovery of the stock.* Our WSP prescribes a systematic approach to salmon management, essentially moving DFO from a reactive to a pro-active approach for maintaining the biodiversity of salmon populations within Canada. To ensure that fisheries have acceptable harvest limits on non-target stocks and that the management system allows for rebuilding of non-target stocks, DFO will: • Implement 'Strategy 1' of the WSP: Define LRPs and TRPs for non-target stocks (CUs) and monitor their status. The objective for fishery management shall be to maintain CUs above their LRPs unless otherwise determined by the Minister. Not meeting this objective would occur only in exceptional circumstances where management actions are assessed to be ineffective, or the social and economic costs will be extreme (p.29 WSP). • Implement 'Strategy 4' of the WSP: Create a regional framework for integrated planning that will be used to articulate salmon management choices that consider social, economic and biological consequences. Consensus based advisory processes will be used to assist in defining these trade-offs and also to assist in developing strategic plans for the management of salmon conservation units; including harvest strategies designed to maintain the biodiversity of stocks within the CU. • Benchmarks will be used to guide management response. For example, if a CU is below its lower benchmark and in the 'Red Zone' this will trigger consideration for ways to protect the fish, increase their abundance and reduce the risk for loss. Biological considerations will be the primary consideration for CU below the lower benchmark and in the 'Red Zone'. Page 17 of the WSP identifies additional guidance on how response would be taken for CU between the lower and upper benchmark. • Implement Strategy 5 of the WSP. Review annual performance against measurable objectives, particularly with regards to stock status and rebuilding objectives.

	Specifically, DFO will also define LRPs or their equivalent for Fraser River, Barkley Sound, Skeena and Nass sockeye CUs. A rebuilding plan consistent with the WSP will have been developed and implementation underway within 2 years for stocks harvested in fisheries targeting Fraser River, Barkley, Nass and Skeena sockeye that are below their LRPs. For Barkley Sound this will include consideration for Henderson sockeye. On the Skeena and Nass Rivers the proposed rebuilding plan will include measures to recover chum salmon stocks that are below their LRP contingent upon determining whether harvest pressure is found to have a significant risk for chum rebuilding. The rebuilding plan will include a stated objective and rebuilding target and timeline for rebuilding. This rebuilding plan will demonstrate how the fisheries management strategy will assist in ensuring rebuilding objectives are met. Fishery actions may only be one component of a rebuilding plan and could include enhancement, habitat and other measures to enable rebuilding objectives being met. It must recognized though, that there will be instances that rebuilding is not possible even where the appropriate management actions are implemented. Rebuilding may not be possible due to a variety of events that are beyond our control (e.g. low marine survival, habitat changes, environmental conditions, etc.)
Observations from 1st Surveillance	**Summary** (from DFO Submission for Sakinaw Sockeye – 11 May 2011) Rebuilding of Sakinaw Lake sockeye remains a priority for Fisheries and Oceans Canada, in collaboration with the Sechelt First Nation, British Columbia, local government, and the local community (see Pacific Integrated Fishery Management Plan – Southern BC Salmon, 2010, page 27). Starting in 2003, a number of actions were initiated to address the most pressing threats identified in the draft National Recovery Strategy for Sockeye Salmon, Sakinaw Lake Population, in British Columbia (Sakinaw Sockeye Recovery Team 2005). These actions are summarized in this report. Highlights include a significant reduction in exploitation rate, captive breeding program, and restoration of spawning beaches. In the period 2006-2009 a total of 2 adult sockeye returned to Sakinaw Lake. Available evidence suggests that factors outside the Strait of Georgia have caused poor marine survival (mean <0.2% since 2003) that is preventing recovery of Sakinaw sockeye in the timeline proposed (Wood et al 2011). Evaluation of results of actions taken, relevant to the overall rebuilding goal, will be undertaken after 2012, once adult returns from the current captive breeding program are complete. Rebuilding efforts will continue, including stewardship, enhancement through conventional supplementation and captive brood, reduced fishing mortality, and monitoring of smolts and adults. **Update on Recovery Actions** The Recovery Team proposed the following approaches and actions to achieve the goal and objectives of Sakinaw sockeye. A brief update for each is provided below: a. *Engage and consult stakeholders using the appropriate consultative and media process.* • In the beginning the agencies, the community and First Nations were actively engaged but little has occurred since 2008. An adhoc recovery team is being formed to continue to address local threats to recovery. b. *Study water quality within intra-gravel flow found on spawning beaches.* • Reports were completed by G3 Consulting etitled: Sakinaw Lake Underwater Substrate Profiling of Sockeye spawning Area(2002), Sakinaw Lake Intra-gravel Dissolved Oxygen Assessment (2003) c. *Determine utilization of lake resources by juvenile sockeye and the identification of limiting factors.* • Godbout et al. 2004. Acoustically tagged kokanee, a proxy of sockeye, were used to identify which basins (lower, main and upper) of the lake was used for spawning. Tracking of the tagged kokanee showed that spawning

occurred predominantly and almost exclusively in the upper basin of the lake. Only 1 -2 out of the 24 tagged were not observed in the upper basin, and these may not have spawn.

- Godbout et al. (2004) found that spawning habitat does not appear limiting as there appears to be capacity for 410 female in the upper basin alone.
- Although the spawning carrying capacity was found sufficient to achieve at least 250 females every year, the smolt carrying capacity may limit the recovery to previous historical highs (5000 spawners) if the lake nursery was limited to the upper basin alone.

d. Develop and implement watershed stewardship initiatives.

- Both the Sakinaw Land Owners Association and the Iris Griffith Center are active in stewardship in the area and have an interest in being part of the rebuilding effort. The local DFO Community Advisor has a support role in this regard with some resources originating from the Community Involvement Program (Cindy Harlow, DFO, pers. comm.).

e. Collect hydrometric data on the main watershed lake basins and tributaries focusing on surface water volume.

- A Water Balance Study for Sakinaw Lake was completed and provided to the Regional District and local community for implementation. (Grant McBain pers. comm.).

f. Reduce natural and fishing mortality on Sakinaw sockeye.

- See Salmon IFMP regarding fishery objectives. Johnstone Strait fishery openings targeting Fraser sockeye are delayed until end of July to minimize exploitation of Sakinaw sockeye.

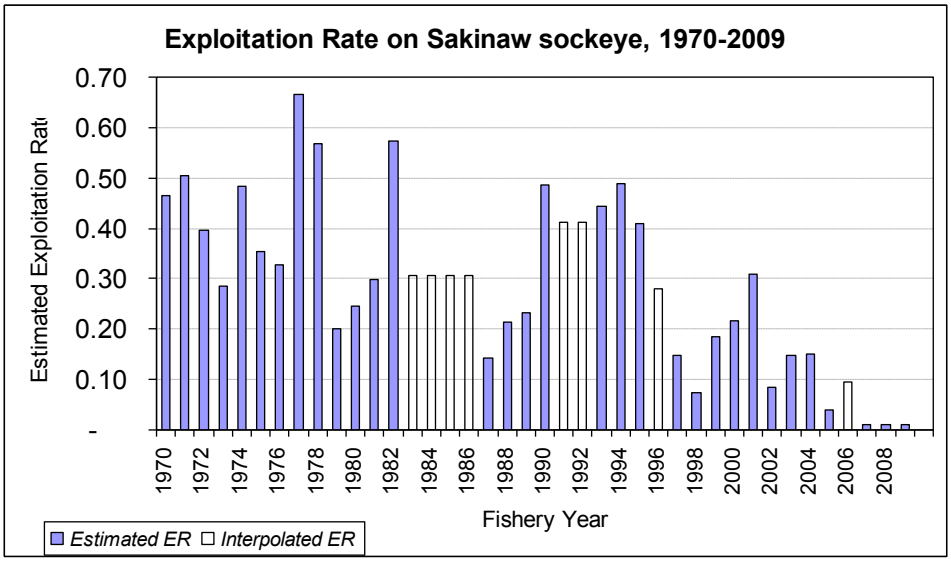


Figure 11: Reconstructed exploitation rate on Sakinaw Lake sockeye for years where there is sufficient escapement information to support the reconstruction. Exploitation in years where escapement information is not sufficient is interpolated as average of two estimated ER immediately before and two estimated ER after. 2007, 2008, 2009 estimated to be less than 1% ER since no commercial fisheries. Test fishing and FSC only. Adapted from Folkes et al. 2006.

- Local efforts include daily patrols, during peak migration period, at entrance to lake to monitor marine mammal activity and deter predation where possible.

g. Implement a captive brood and fry stocking program with marking of hatchery fry.

- Both captive brood and conventional supplementation since 2001 (see figure 2). Initial release of fry into lake from captive brood in 2007. Both methods are ongoing.

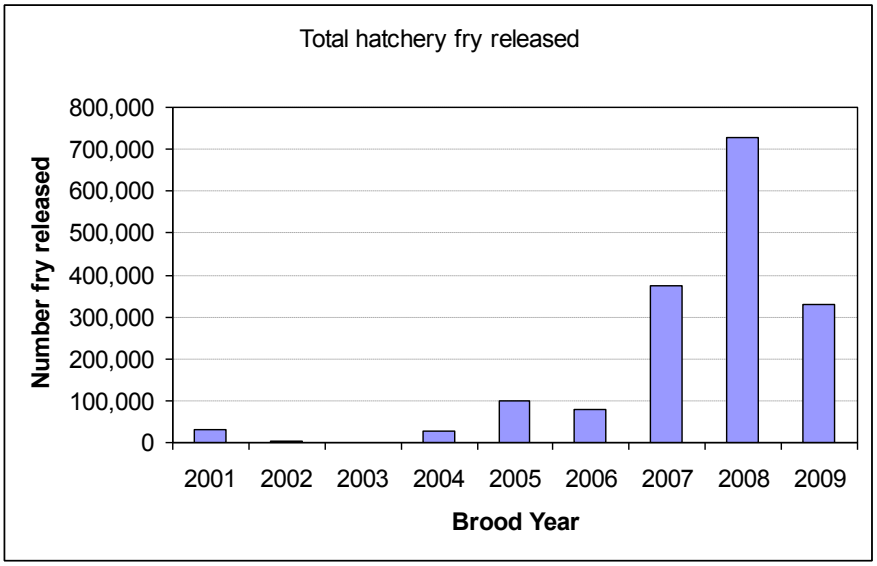


Figure 12: Total hatchery origin sockeye fry released into Sakinaw Lake.

h. Enumerate and collect biological information on smolts migrating out of the Sakinaw Lake.

- Monitoring of smolt emigration out of Sakinaw Lake was initiated by DFO in 2003 and continues. A downstream trap is incorporated into the flow control weir that is located at the outlet of the lake, at the upper tidal influence of Sakinaw Creek. The trap is installed during the early part of April and maintained through to early June. The trap is attended daily during shoulder periods and twice daily during the peak migration period in early May. Field work is conducted by fisheries staff of the Sechelt Indian Band, who control the Reserve Land in and around Sakinaw Lake. Total live smolt count is presented in Table 1.

Table 8. Adult returns to Sakinaw Lake, associated hatchery origin fry releases, and subsequent counts of live smolts emigrating out of Sakinaw Lake. From Steve Baillie 2011.

BroodYear	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Adult return Hatchery AFC	0	0	0	0	7	0	0		1	27
Adult return not AFC	60	78	3	99	17	1	0	0	0	2
Total Adult Return	60	78	3	99	24	1	0	0	1	29
Fry released AFC wild parents	31922	2784	0	0	0	0	0	0	0	
Fry released AFC captive brood	0	0	0	25927	92035	80576	374188	727376	328928	
Fry released AFC mixed	0	0	0	0	7588	0	0	0	0	
Fry released NOT-AFC	0	0	0	0	0	0	0	0	0	
Total hatchery fry released	31922	2784	0	25927	99623	80576	374188	727376	328928	
Hatchery smolts released-AFC					5485					
Total live smolts out - AFC	8080	39	2	8357	3739	11982	62370	404		
Total live smolts out - not AFC	4334	103	11	2926	272	182	222	69540		
Total live smolts counted out	12414	142	13	11283	4011	12164	62592	69944		
Inlake fry to smolt survival	25.3%	1.4%		32.2%	3.6%	14.9%	16.7%	9.6%		

These calculations assume that all sockeye migrate to marine waters as sub2 age smolt and return as age 4sub2 adult
Marine survival is calculated as smolts out / adult return and assumes zero exploitation rate
need to check 2008 hatchery AFC application. Most out migrants were NOT AFC

i. Tag Sakinaw smolts to estimate routes and timing of juveniles and adults.

- Summarized from Wood et al. 2011. Wood determined sockeye and kokanee were two genetically distinct sympatric ecotypes inhabiting Sakinaw Lake. POST tagging of both sockeye smolts and juvenile kokanee was conducted. Seaward migration of juvenile sockeye was primarily northward through Johnstone Strait in 2 of 3 years studied (92% of migratory fish in 2004 and 84% in 2006). The number of tagged fish detected as returning adults with operational tags was low (3 sockeye at the release site), but none of these fish had been detected crossing seaward POST lines as

juveniles and thus appeared to be non-migratory. None of the fish passing the POST lines returned. This suggests factors outside the Strait of Georgia have caused the poor marine survival that is preventing recovery of Sakinaw sockeye.

j. Develop and implement selective fishing strategies that would reduce commercial and food fishing impact on Sakinaw sockeye. **See item f above on reduced fishing mortality.**

k. Monitor adult sockeye when they enter the lake and when they spawn (abundance, size, age and other biological (characters).

- Adult sockeye enter the freshwater system through a fishway that bypasses the flow control weir. During the summer months when these salmon are returning the water flow is restricted by gates on the weir to maintain a consistent water level within Sakinaw Lake, and the only water released goes through the fishway. A structure is installed within the fishway during June that allows passage through a narrow Plexiglas tunnel. A mirror is installed alongside the tunnel to allow an overhead video camera to record both an overhead view and a side view of the tunnel. Thus all sockeye entering the fishway are recorded in a digital video format. The images are clear enough to discern whether the salmon has an intact adipose fin or a clip. Results are presented in Table 1. (from Baillie 2011)

l. Rehabilitate spawning, rearing and migration habitat in the lake and outlet stream.

- There were numerous projects conducted in the 2002-2006 period. One project had the objective to ensure access into the lake through the fish way at the Sakinaw Creek mouth. These projects included installation of Newbury weirs to create back water rifles, the rebuilding of the spill-way, and improvements to fish ladder. From Harlow, Cindy (pers comm.).

- Two of the spawning beaches were restored via a scuba diving team who removed logs and debris from the spawning beds and then conducted further improvements to the identified Redds. These areas were then raked and enhanced with clean gavel. Gravel was also placed at the mouth and shoreline fronting Haskins Creek which has historically been an active spawning area.

- Ongoing work is through the efforts of Stewardship groups such as the Sakinaw Landowners Association in consultation with the Community Involvement Program, including maintenance of access for adults and that tributary streams are available for spawning and rearing.

m. Identify critical habitat for each life stage by modeling impacts of habitat loss/improvement along with other management actions on population viability.

- Godbout et al. 2004. A model was developed which suggested that spawning habitat for 280 to 360 female spawners is required (depending on scenario) for Sakinaw sockeye to have <10% probability of quasi-extinction and 95% probability of meeting the recovery goal assuming no fishing exploitation. To offset 15% exploitation, spawning habitat for an additional 7-110 female spawners (depending on scenario) would be needed. All scenarios include artificial propagation.

n. *Identify potential spawning locations in Sakinaw Lake other than the 5 beaches listed in the recovery plan.*

- See Godbout et al. 2004 in item 'c' above.

Outlook.
Given lack of wild spawners in contributing brood years, poor marine survival, and limited smolt abundance, returns in 2011 and 2012 are not expected to exceed 100 adult returns.

Conclusion from 1st Surveillance Report	**The above assessment of the Sakinaw Lake sockeye recovery strategy provides clear evidence that Fraser sockeye fisheries have had minimal effect on the recovery of Sakinaw sockeye from 2007-09. It is also clear from recent low numbers of sockeye returning to Sakinaw Lake that the recovery of this stock primary depends on returns from hatchery fry releases and improvements in marine survival returns.** **The part of this condition related to "Refinement and peer review of run reconstruction analyses for Sakinaw sockeye" was not address for 2007-09 because of the minimal amount of fishing for Fraser sockeye that was permitted in these years in areas where Sakinaw sockeye could be harvested. The evaluation of this condition is differed until the 2nd surveillance audit when exploitation rates for 2010 Fraser sockeye fisheries will be available.**
Client Progress 2nd Surveillance	With regard to Condition 18: As indicated for Condition 1: An estimate of the 2010 and 2011 exploitation rates for Sakinaw sockeye was provide in a eight page report prepared by Michael Folkes (2 May 2012). This report was clearly an incomplete draft with several dates missing related to fence count operations and statements indicating that the author has concerns that the 2010 exploitation rate is an underestimate of the actual value. The run timing for the 2010 estimate was based on data from a return of only 29 sockeye whereas the 2011 run timing was derived from a return of 555 sockeye. The 2011 run timing was fairly consistent with the historical run timing data with the migration through Johnstone Strait extending through mid-August. In contrast, the minimal 2010 data does not include any returns after the end of July. Given the much more substantial fishery in 2010 than 2011 and PSC estimates of the Johnstone Strait harvest rates for sockeye exceeded 80% for a few days in early August and could have removed any returning Sakinaw sockeye. Consequently, the AT suggested that DFO provide an exploitation rate estimate for 2010 based on the 2011 or historical average run timing for Sakinaw sockeye. With regard to Condition 19: DFO has provided a CSAS report (Grant et al. 2012) as evidence of the progress being made toward setting the lower and upper benchmarks for Fraser sockeye CUs. Sue Grant confirmed that these benchmarks are being established as 4 year averages to assess stock for each CU over a 4 year period under the WSP. These benchmarks are not equivalent to the LRPs and TRPs (annual management benchmarks) needed to make decisions regarding fishery openings and closures. These 4-year average WSP benchmarks are not informative for the management of highly cyclic stocks which represent several of the largest stocks in the Fraser watershed.
Observations from 2nd Surveillance	As indicated for Condition 1: The AT has identified concerns regarding the 2010 exploitation rate estimates for Sakinaw sockeye. Folkes states in his 2 May 2012 document that "based on knowledge of historical run timing, it is likely that the 2010 run timing estimate is not representative and the calculated exploitation rate is an underestimate of the actual value". The AT needs DFO to produce a scientifically defensible estimate of the 2010 exploitation rate for Sakinaw sockeye in order to evaluate compliance with Condition 18. With regard to Condition 19, DFO has not defined the LRPs or their equivalent for Fraser sockeye stocks and, therefore, it has not been possible to identify those stocks that are below their LRPs. DFO is in the process of defining lower and upper benchmarks for each sockeye CU on a 4-year average basis but these benchmarks have not been translated into LRPs and TRPs for fisheries management purposes.
Conclusion from 2nd Surveillance Report	Based on the information presented to date, the team's conclusion is that the requirements of Conditions 18 and 19 have not been fully met. The AT concluded that these conditions are behind target as it was not met on the agreed schedule. As such, the AT have specified an additional milestone and deliverable timeframe in keeping with the requirements defined by the MSC Certification Requirements, version 1.2, Section 27.22, subnote 116: *Those fisheries who signed a certification contract prior to 7 February 2011 may apply the following in place of 27.22.8.1 b i:* *If progress against an interim milestone is judged to be behind target, the CAB shall specify the remedial action required, and if relevant, further milestones and scores to be achieved, and the time frame by which the milestone shall be achieved.*

	By meeting the requirements of Conditions 1, 3 and 5 by the third surveillance audit, the client will also meet the requirements of Conditions 18 and 19.

3.3 Fraser Conditions – Principle 3

Condition 24	Certification will be conditional until a clear set of management objectives has been defined and found to be consistent with MSC criteria and measures are taken to reduce the bycatch of sturgeon and improve the monitoring systems used to estimates sturgeon bycatch. Both of these tasks should be completed within two years. (**Fraser Condition #3.1**).
Assessed Activity	This Condition relates to Indicator 3.1.1 PI: The management system has a clear and defensible set of objectives for the harvest and escapement for target species and accounts for the non-target species captured in association with, or as a consequence of, fishing for target species. 100 Scoring Guidepost • Management objectives are clearly defined for all of the target stocks and are consistent with the MSC criteria for a well-managed fishery. • Harvest rates and escapement goals are precisely set for each target stock unit in the fishery, as qualified by relevant environmental factors. • Target Reference Points and Limit Reference Points are clearly defined and documented for each target stock unit in the fishery. • Harvest controls are effective with respect to the attainment of management objectives for each target stock unit in the fishery. • The management system provides estimates for all catches, landings and bycatch. 80 Scoring Guidepost • Management objectives are clearly defined for most of the target stocks and are consistent with the MSC criteria for a well-managed fishery. • Harvest rates and escapement goals are set for target stocks or target species in the fishery, as qualified by relevant environmental factors. • Harvest controls are precise and effective for major target stocks or target species in the fishery. • The management system provides estimates for all major catches, landings, and bycatch. 60 Scoring Guidepost • Management objectives are clearly defined and consistent with MSC criteria for a well-managed fishery for the majority of target stocks. • Harvest controls are effective for the majority of the fisheries on target stocks. • The management system provides for the estimation of catch, landing, and bycatch for the majority of the fisheries. **SCORE 75** The management agency's detailed submission for Fraser sockeye (DFO Fraser 2003c, p.4) suggested that a score of 98 was appropriate for this indicator. Wilson (2005) indicated that one of the 80 scoring guidepost was not met because "within the Fraser and outside of the Fraser there are persistent concerns regarding the quality of catch monitoring in First Nations food social and ceremonial fisheries". In addition to these concerns regarding catch monitoring, the Team has concerns regarding the results from the ongoing processes to define the conservation units and management objectives for Fraser sockeye stocks under the Fraser River Sockeye Spawning Initiative and the WSP. These processes need to be completed before we can assess whether these objectives are consistent with MSC criteria. On a separate issue, there are significant concerns regarding the data on the bycatch and mortality of sturgeon in Fraser River sockeye fisheries. The Team's score was 75.
DFO Action Plan	Measures are already in place to reduce sturgeon impacts in the commercial, recreational, and First Nation fisheries in the Fraser River. All commercial Area E, recreational, and First Nations commercial fisheries are mandatory non-retention, and sturgeon releases are included

	in catch reports from fishery participants. For the First Nation FSC fishery, catch is reported either through a census-based program (which should have 100% reporting), or a creel survey, which will generate a sturgeon release estimate within +/- 20%. New for 2007 Area E commercial fisheries also had a census-based catch reporting program, which should meet the 100% reporting requirement for sturgeon releases. Sturgeon releases from the recreational fisheries are estimated with a creel survey, which will have some error associated with it. As mentioned previously, several test-fisheries are conducted in the area providing an independent indicator of the presence and scope of any by-catch issues. Monitoring data to estimate the impact of Fraser River sockeye fisheries on sturgeon was not available in 2009 because there was no Area E Commercial Sockeye Fishery. Delayed delivery of a May 2012 report based on 2010 and 2011 fisheries monitoring is contingent on having commercial fisheries in 2010 and 2011. For consideration, to address the potential impacts on sockeye fisheries on sturgeon, an alternative approach could be to use Albion, Cottonwood and Whonnock sturgeon encounters as a proxy. To satisfy this condition DFO will develop a two year program (e.g. modelling, test fishery expansion, census based and/or observer based) to estimate the impact of Fraser River sockeye fisheries on steelhead and sturgeon beginning in 2010. The need for further work will be assessed according to the results of this program. A report summarizing the work will be completed in May 2012 and provided to the Certifier.
Observations from 1st Surveillance	The AT has not been provided any evidence of improvements to the catch monitoring systems for Fraser sockeye that would ensure that "reasonable, reliable, and defensible estimates of the harvest of white sturgeon and steelhead" are available within a reasonable time frame. In addition, the AT has not been provided any evidence that measures have been taken to reduce the bycatch of sturgeon.
Conclusion from 1st Surveillance Report	**This condition will be evaluated at the next surveillance audit.**
Client Progress 2nd Surveillance	The client progress regarding setting management objectives (LRPs and TRPs) for target stocks has been described under Conditions 5 and 6. Progress regarding improving monitoring systems used to estimate sturgeon bycatch has been described under Condition 17.
Observations from 2nd Surveillance	All of the observations provided for Conditions 5 and 6 regarding management objectives and Condition 17 regarding bycatch monitoring, are relevant to the evaluation of Condition 24.
Conclusion from 2nd Surveillance Report	Based on the information presented to date, the team's conclusion is that the requirements of Condition 24 has not been fully met. The AT concluded that this condition is behind target as it was not met on the agreed schedule. As such, the AT have specified an additional milestone and deliverable timeframe in keeping with the requirements defined by the MSC Certification Requirements, version 1.2, Section 27.22, subnote 116: *Those fisheries who signed a certification contract prior to 7SG February 2011 may apply the following in place of 27.22.8.1 b i:* *If progress against an interim milestone is judged to be behind target, the CAB shall specify the remedial action required, and if relevant, further milestones and scores to be achieved, and the time frame by which the milestone shall be achieved.* As indicated for Conditions 5, 6 and 17, the progress has not been sufficient to meet the requirements for the non-compliant SG80 scoring issues. By meeting the requirements of Conditions 5,6 and 17 by the third surveillance audit, the client will also meet the requirements of Condition 24.

Condition 25	Certification will be conditional until the management agency provides a clear commitment to implement recovery action plans for Cultus and Sakinaw sockeye, within one year (**Fraser**

	Condition #3.2).
Assessed Activity	This Condition relates to Indicator 3.1.4 PI: When dealing with uncertainty, the management system provides for utilizing the best scientific information available to manage the fishery, while employing a precautionary approach. 100 Scoring Guidepost • The management system provides for the routine assessment of the level of uncertainty in the information collected for management and establishes management controls to address these uncertainties using the best available scientific information and a precautionary approach. • The management system implements research efforts to address data gaps. • For newly developing fisheries for which there is very limited data and information, the management system implements controls on the development of the fishery that are precautionary in nature. • The management system always quantitatively evaluates the effect of implementation uncertainty (the tendency for actual harvest rates or escapements to differ from those intended by the management regulations) on the effectiveness of the proposed management actions. 80 Scoring Guidepost • The management system provides for some assessment of the level of uncertainty in the information collected for management and establishes management controls which take into account these uncertainties, using the best available scientific information and a precautionary approach. • In situations when precautionary measures are necessary to manage the fishery, the management system calls for increasing research efforts in order to fill data and information gaps. • In most cases where there are newly developing fisheries, the management system implements controls on the development of the fishery that are precautionary in nature. • The management system considers the effect of implementation uncertainty on the effectiveness of most of the proposed management actions. 60 Scoring Guidepost • The management system for the majority of newly developing fisheries is consistent with a precautionary approach. • The management system considers the effect of implementation uncertainty on the effectiveness of the majority of the proposed management actions. **SCORE 77** The management agency's detailed submission for Fraser sockeye (DFO Fraser 2003c, p.13) suggested that a score of 100 was appropriate for this indicator. Wilson (2005) indicated that one of the 80 scoring guidepost was not met because "DFO does not always manage in a precautionary manner, or use the best scientific advice". The Team agreed that DFO has not always managed in a precautionary manner and has not shown a clear commitment to define and implement action plans for two sockeye stocks (Cultus and Sakinaw) where precautionary measures are necessary to manage Fraser sockeye fisheries. The Team's score was 77.
DFO Action Plan	These conditions will be met in part through implementation of the WSP, particularly Strategy 4, as described above. Strategy 4 requires development of an integrated strategic plan for salmon management that clearly states conservation, habitat and ecosystem objectives. Moreover, strategy 5 requires annual review of the plan's ability to meet these objectives. For Barkley and Skeena sockeye fisheries, Strategy 4 and 5 will be implemented over the next 3 years. For Fraser sockeye fisheries, Strategy 5 will be implemented over the next 3 years. In addition, over the next two years, DFO will be revising the format for Integrated Fisheries Management Plans (IFMPs). The new IFMP template is much more fishery specific and requires elements not included in past IFMPs, such as stock status, a socioeconomic overview

	and summary of management issues. Development of these IFMPs will require many of the gaps identified in the conditions to be addressed.
Observations from 1st Surveillance	As indicated under Condition 7 for Cultus sockeye and Condition 18 for Sakinaw sockeye, the management agency has provides a clear commitment to implement recovery action plans for Cultus and Sakinaw sockeye. This commitment is included in the 2011-12 IFMP for Southern BC salmon.
Conclusion from 1st Surveillance Report	**Based on the information provided by DFO for Cultus and Sakinaw sockeye and the recent IFMPs, the management system has implemented new research efforts in order to fill data and information gaps under the current conditions where precautionary measures are necessary to manage the harvests of these stocks in Fraser sockeye fisheries. Therefore, the second 80 level scoring guideposts has been met and the score for this indicator has been raised to 80.**

Condition 26	Certification will be conditional until the management agency provides clear evidence that measures are being implemented to encourage harvesters not to exceed catch targets or exploitation rate limits, within two years. (**Fraser Condition #3.3**).
Assessed Activity	This Condition relates to Indicator 3.1.8 PI: The management system provides for socioeconomic incentives for sustainable fishing. 100 Scoring Guidepost • The management system has formal procedure for providing social and economic incentives to stakeholders in the fishery to develop and utilize sustainable fishing practices, particularly the development of selective fishing gear and practices that lead to improved conservation. • The management system creates strong incentives for harvesters to not exceed target catches or exploitation rates. • The stakeholders in the fishery regularly avail themselves of the opportunity to utilize these incentives. • Evidence provided by the management system demonstrates that such incentives have contributed to improved conservation. • The management system continually attempts to understand the impact of their decisions on social and economic factors affecting the stakeholders in the fishery and regularly takes action to mitigate the impacts on stakeholders. 80 Scoring Guidepost • The management system regularly considers the use of social and economic incentives to the stakeholders in the fishery, which are designed to facilitate the development of fishing gear and practices that can lead to sustainable fishing • The management system includes a program to create incentives for harvesters to not exceed target catches or exploitation rates. • Evidence demonstrates that the stakeholders in the fishery have used such incentives. • The management system attempts to understand the impact of their management decisions on social and economic factors affecting the major stakeholders in the fishery and takes action to lessen the major impacts on stakeholders. 60 Scoring Guidepost • The management system provides for the use of social or economic incentives to ensure sustainable fishing. • The management system attempts to understand the impact of its decisions on social and economic factors affecting the stakeholders in the fishery and is responsive to requests to reduce these impacts. **SCORE 77** The management agency's detailed submission for Fraser sockeye (DFO Fraser 2003c, p.20) suggested that a score of 97 was appropriate for this indicator. Wilson (2005) agreed with

	DFO's assessment that all scoring guideposts were met except one at the SG100. The Team found that the second guidepost at the SG80 was only partially met because DFO has not implemented management approaches, such as defined allocations, that create incentives for harvesters to not exceed target catches. First Nation treaties provide an avenue for defining salmon allocations and penalizing those that exceed these limits by reducing their harvest opportunities in future years. The Team's score was 77.
DFO Action Plan	These conditions will be met in part through implementation of the WSP, particularly Strategy 4, as described above. Strategy 4 requires development of an integrated strategic plan for salmon management that clearly states conservation, habitat and ecosystem objectives. Moreover, strategy 5 requires annual review of the plan's ability to meet these objectives. For Barkley and Skeena sockeye fisheries, Strategy 4 and 5 will be implemented over the next 3 years. For Fraser sockeye fisheries, Strategy 5 will be implemented over the next 3 years. In addition, over the next two years, DFO will be revising the format for Integrated Fisheries Management Plans (IFMPs). The new IFMP template is much more fishery specific and requires elements not included in past IFMPs, such as stock status, a socioeconomic overview and summary of management issues. Development of these IFMPs will require many of the gaps identified in the conditions to be addressed.
Observations from 1st Surveillance	There have been several developments with regard to First Nation Treaty negotiations (e.g. Tsawwassen Treaty implementation in 2009, Maanulth Treaty implementation in 2010, and demonstration ITQ seine and troll fisheries for Fraser sockeye) that clearly create incentives for harvesters to not exceed target catches or exploitation rates.
Conclusion from 1st Surveillance Report	**Given progress to date, the AT expect that the management agency will meet the requirements of the 80 level guideposts within the required time frame of 2 years.**
Client Progress 2nd Surveillance	The implementation of ITQ seine and troll fisheries for Fraser sockeye and bycatch ceilings for sockeye in fisheries targeting pink salmon has created clear incentives for these fishers not to exceed target catch or exploitation rates.
Observations from 2nd Surveillance	Good progress has been made regarding this indicator but more work remains to be done to provide clear incentives for gillnet fisheries to not exceed target catches or exploitation rates. Possible examples of incentives for gillnetters to not exceed target catches or ERs include such measures as establishment of mandatory landing sites with 100% dockside monitoring of those catches, clear penalties for fisheries who's logbooks do not match dockside monitoring results, among others.
Conclusion from 2nd Surveillance Report	Based on the information presented to date, the team's conclusion is that the requirements of Condition 26 have not been fully met. The AT concluded that this condition is behind target as it was not met on the agreed schedule. As such, the AT have specified an additional milestone and deliverable timeframe in keeping with the requirements defined by the MSC Certification Requirements, version 1.2, Section 27.22, subnote 116: *Those fisheries who signed a certification contract prior to 7 February 2011 may apply the following in place of 27.22.8.1 b i:* *If progress against an interim milestone is judged to be behind target, the CAB shall specify the remedial action required, and if relevant, further milestones and scores to be achieved, and the time frame by which the milestone shall be achieved.* The AT expects that this condition could be closed out after the 3rd surveillance audit if DFO provides evidence of continuing measures that provide incentives for all fishers not to exceed target catches or exploitation rates.

Condition 27	Certification will be conditional until the management agency provides a research plan that addresses identified concerns related to the impact of the fishery on the ecosystem, with emphasis on non-target stocks, and takes into consideration socioeconomic factors and anticipated changes to fisheries, within two years. (**Fraser Condition #3.4**).
Assessed Activity	This Condition relates to Indicator 3.2.1. PI: The research plan covers the scope of the fishery, includes all target species, accounts for the non-target species captured in association with, or as a consequence of fishing for target species, and considers the impact of fishing on the ecosystem and socioeconomic factors affected by the management program. 100 Scoring Guidepost • The management system incorporates a research component that considers relevant data and information needs for formulating management strategies for all target species, and also information leading to an understanding of the dynamics of the ecosystem including data on the catch, landings and discards of non-target species. • The framework for research includes investigations dealing with socioeconomic impacts of the fishery. • The research plan responds in a timely fashion to unexpected changes in the fishery. • Funding is secure and sufficient to meet long-term research needs. • There is significant continuing progress in understanding the impact of the fishery on target and non-target species, and the ecosystem in general. • Research results form the basis for formulating management strategies and decisions. • Research is regularly published in peer review journals and/or is reviewed by PSARC or the PSC. 80 Scoring Guidepost • The management system incorporates a research component that provides for the collection and analysis of information necessary for formulating management strategies and decisions for both target and non-target species. • The research plan addresses concerns related to the impact of the fishery on the ecosystem. • The research plan addresses socioeconomic issues that result from the implementation of management. • The research plan is responsive to changes in the fishery. • Funding is adequate to support short-term research needs. • There is progress in understanding the impact of the fishery on target and non-target species. • Research results are utilized in forming management strategies. • Research is reviewed by PSARC or PSC, or other appropriate and technically qualified entities. 60 Scoring Guidepost • Research provides for the collection of catch statistical and biological data for the target species. • There has been useful research on the impact of fishing on target and non-target species taken in the fishery, and on the ecosystem in general. **SCORE 73** The management agency's detailed submission for Fraser sockeye (DFO Fraser 2003c, p.30) suggested that a score of 95 was appropriate for this indicator. Wilson (2005) indicated that one of the 80 scoring guidepost was not met because "DFO's assessment of non Fraser non-target stocks harvested primarily in Fraser sockeye fisheries (inside sockeye) is inadequate by DFO's own admission." The Team found that three of the 80 scoring guideposts were not met because the lack of any research plan for Fraser sockeye makes it difficult to assess whether the plan addresses concerns related to the impact of the fishery on the ecosystem, socioeconomic issues that result from the implementation of management plans, or if the research plan is responsive to changes in the fishery. The Team's score was 73.

DFO Action Plan	The requirement to include ecosystem values and objectives in planning process is an element of the WSP. It is also an element of the new IFMP template described above that will be implemented for salmon fisheries starting in 2012. To addresses the need to include other objectives (ecosystem, socio-economic) in the planning process and assess performance against these objectives, we will need to re-align our current reporting and/or re-allocate research resources. DFO has developed a Resource Assessment Framework for Fraser River sockeye (PSARC review in May 2008) to help guide assessment priorities based on the biological status and knowledge gaps for each CU. Once LRPs are developed for each CU, they will be integrated into the assessment framework. The Fraser sockeye assessment framework will serve as a template for other CUs.
Observations from 1st Surveillance	The progress on defining CUs, developing WSP benchmarks and the draft Fraser sockeye assessment framework indicate that significant progress has been made with regard to this condition.
Conclusion from 1st Surveillance Report	**Given progress to date, the AT expect that the management agency will meet the requirements of the 80 level guideposts within the required time frame of 2 years.**
Client Progress 2nd Surveillance	During the site audit, DFO provided a broad description of what would be included in their stock assessment plan but details were not provided. DFO subsequently provided a copy of the preliminary Salmon Stock Assessment 2012-13 Business Plan and a preliminary list of proposed salmon assessment projects for the 2012-13 season. A copy of the salmon integrated stock assessment plan was not provided.
Observations from 2nd Surveillance	The information provided includes planning and budgeting considerations for this season.
Conclusion from 2nd Surveillance Report	Based on the information presented to date, the team's conclusion is that the requirements of Condition 27 have not been met. The AT concluded that this condition is behind target as it was not met on the agreed schedule. As such, the AT have specified an additional milestone and deliverable timeframe in keeping with the requirements defined by the MSC Certification Requirements, version 1.2, Section 27.22, subnote 116: *Those fisheries who signed a certification contract prior to 7 February 2011 may apply the following in place of 27.22.8.1 b i:* *If progress against an interim milestone is judged to be behind target, the CAB shall specify the remedial action required, and if relevant, further milestones and scores to be achieved, and the time frame by which the milestone shall be achieved.* This condition remains incomplete until a stock assessment or research plan has been provided and evaluated. Based on information provided, the team expects this to be delivered by the third surveillance audit.

Condition 28	Certification will be conditional until the management agency provides TRP's for the Cultus sockeye salmon stock, a clear indication of the commitment to implement the Cultus Sockeye Recovery Plan, and an assessment of the probability of recovery and the timing for recovery for Cultus sockeye, within one year. (**Fraser Condition #3.5**).
Assessed Activity	This Condition relates to Indicator 3.4.1.2. PI: Provides for restoring depleted target species to specified levels within specified time frames. 100 Scoring Guidepost • The management system has a formal and codified mechanism, which is adequate for restoring depleted target stocks to the TRP or equivalent high level of abundance, as qualified by relevant environmental factors. • The mechanism includes strict guidelines for restoring these depleted populations within a certain time frame are formalized by the management system.

	80 Scoring Guidepost • The management system includes measures, which are adequate to restore depleted populations of target stock to the TRP or equivalent high level of abundance as qualified by relevant environmental factors. • A time schedule for restoration, which considers environmental variability, is determined by the management system. 60 Scoring Guidepost • The management system includes measures for restoring the majority of depleted populations of target stock to the TRP or equivalent high level of abundance. **SCORE 70** The management agency's detailed submission for Fraser sockeye (DFO Fraser 2003c, p.42) suggested that a score of 70 was appropriate for this indicator. Wilson (2005) indicated that the 80 scoring guideposts were only partially met because "the status of individual target stocks or CUs are not assessed now, and may not be assessed under the new Wild Salmon Policy". The lack of TRP or equivalent for the depleted Cultus sockeye stock and the lack of a time schedule for recovery suggests that the two 80 guideposts have not been fully met. The recovery plan needs credibility by providing clear restoration guidelines, time frames, and a strategy for incremental changes to management and incremental increases in funding when the time schedule for achieving the TRP is not met. The Team's score was 70.
DFO Action Plan	These conditions will be met in part through implementation of the WSP, particularly Strategy 4, as described above. Strategy 4 requires development of an integrated strategic plan for salmon management that clearly states conservation, habitat and ecosystem objectives. Moreover, strategy 5 requires annual review of the plan's ability to meet these objectives. For Barkley and Skeena sockeye fisheries, Strategy 4 and 5 will be implemented over the next 3 years. For Fraser sockeye fisheries, Strategy 5 will be implemented over the next 3 years. In addition, over the next two years, DFO will be revising the format for Integrated Fisheries Management Plans (IFMPs). The new IFMP template is much more fishery specific and requires elements not included in past IFMPs, such as stock status, a socioeconomic overview and summary of management issues. Development of these IFMPs will require many of the gaps identified in the conditions to be addressed.
Observations from 1st Surveillance	Prior to 2010, the implementation of the Cultus sockeye recovery plan was consistent with the requirements for this condition. However, concerns have been raised regarding the impact of the 2010 fishery on the recovery of Cultus sockeye.
Conclusion from 1st Surveillance Report	**Given the above concerns and the need to finalize the 2010 exploitation rates prior to assessing the potential impact of the Fraser sockeye fishery on Cultus sockeye, the evaluation of this condition is differed until the 2nd surveillance audit when exploitation rates for 2010 Fraser sockeye fisheries will be available.**
Client Progress 2nd Surveillance	DFO provided a preliminary estimate of the 2011 ER for Cultus sockeye (24%) but no estimate was provided for 2010. DFO also provided a brief update on the status of Cultus sockeye. The total escapement in 2010 was over 10,000 sockeye for the first time in many years but pre-spawn mortality was estimated to be 82% and emphasized they had concerns over the very high estimate of pre-spawn mortality (91%) for the 2011 returns.
Observations from 2nd Surveillance	The 2011 IFMP states that: "Cultus Lake Sockeye will be managed within the constraints of the exploitation rate identified for the Late Run aggregate. The maximum allowable exploitation rate for Cultus Lake Sockeye will be the greater of a) the exploitation rate floor identified for Late Run Sockeye (currently set at 20%), or b) the exploitation rate that is consistent with continued rebuilding of the population based on in-season information on returns and potential numbers of effective spawners. The exploitation rate on Cultus Lake Sockeye is intended to allow for fisheries on more abundant co-migrating stocks."
Conclusion from 2nd Surveillance Report	The IFMP wording provide a lot of latitude for the ERs for Cultus sockeye. The client and DFO must provide the 2010 estimate of the ER along with the rationale for the level of exploitation permitted each year as a means to evaluate whether the management measures are

	adequate to restore the depleted Cultus Lake stock. This information should be provided by the 3rd surveillance audit. This condition will be met when DFO provides an assessment of the potential for rebuilding Cultus sockeye given these new ER guidelines used in recent years.

Condition 29	Certification will be conditional until the management agency provides evidence that First Nation issues regarding aboriginal and treaty rights have been identified and these issues are being addressed through an effective consultation or negotiation process, within three years. (**Fraser Condition #3.6**).
Assessed Activity	This Condition relates to Indicator 3.6.3 PI: The management system provides for the observation of legal and customary rights of First Nation peoples. The DFO submissions were essentially identical for all fisheries and suggested that all guideposts were met for each fishery (DFO Fraser 2004c, p. 57-59; DFO Barkley Sound 2004c, p. 47-49; DFO Skeena 2004c, p. 54-55; DFO Nass 2004c, p. 54-55). The Team found that the Fraser, Barkley Sound and Skeena fisheries did not pass one of the guideposts at the SG80 because of concerns expressed by First Nation representatives regarding their access to sockeye for food, social and ceremonial purposes (see section on scores below 80). It was surprising that the submission for the Nass did not make any reference to the Nisga'a Treaty (a comprehensive land claims treaty which included fishing rights for salmon) which has been in effect since 11 May 2000. The Team found that the successful negotiation and implementation of the Nisga'a Treaty was sound evidence that all guideposts have been met and thus the score for this indicator was 100 for the Nass fishery. 100 Scoring Guidepost • The management system is in compliance with all major legal and customary rights of First Nation peoples that are impacted by the fishery. • The management system includes processes for consultation with First Nations peoples on the impact of the commercial fishery on their food, social and ceremonial fisheries. 80 Scoring Guidepost • The management system is found to be in compliance with all legal and most of the customary rights of First Nation peoples that are impacted by the fishery. • The management system includes processes for providing information to First Nations peoples on the major impacts of the commercial fishery on their food, social and ceremonial fisheries. 60 Scoring Guidepost • The management system is in compliance with the legal rights of First Nation peoples that are impacted by the fishery. **SCORE 75** The management agency's detailed submission for Fraser sockeye (DFO Fraser 2003c, p.58) suggested that a score of 100 was appropriate for this indicator. This submission indicates that DFO believes it has met its First Nations obligations to protect and manage for food, social, and ceremonial harvest by First Nations. However, in consultation with First Nations and conservations groups, the assessment team was provided with information indicating that several of the First Nations that harvest Fraser sockeye expressed clear concerns that the management system for Fraser sockeye has not adequately addressed their legal priority rights for FSC fisheries (Wilson 2005) and "is not a transparent process, thus it does not comply with Principle 3 criteria" (see Vol 2: Appendix 4 - Letter from Secwepemc Fisheries Commission dated August 3, 2005). Similar views were expressed by representatives of the BCAFC and Cowichan Tribes. A letter from Chief Kelly of the Soowahlie Band of the Sto:lo First Nation to Minister Thibault of Fisheries and Oceans clearly stated disagreements with the management approach for protection for Cultus and Sakinaw sockeye. The Team's score was 75.
DFO Action Plan	Treaty-making with aboriginal peoples has a long history in Canada. The Crown began

	entering into treaties with aboriginal groups in the early 1700's, which continued until the 1920's. These are referred to as "historic treaties". In the 1970's, treaty-making resumed resulting in "modern treaties" which are generally more complex and detailed than "historic treaties". "Modern treaties" continue to be negotiated in various parts of Canada. In 1982, section 35 was added to the Constitution of Canada. Section 35 provides "constitutional protection" to aboriginal rights and rights under both "historic treaties" and "modern treaties". The Supreme Court of Canada has held that the "constitutional protection" of aboriginal rights and treaty rights means that any infringement of such a right must be justified. The Supreme Court of Canada has also held that aboriginal rights to fish for "food, social and ceremonial" purposes have priority, after conservation, over fishing for commercial or recreational purposes. From a Canadian perspective, it is important to distinguish between an aboriginal right to fish for food and an aboriginal right to fish for "livelihood". The proposed Performance Indicators under this category merge these two distinct concepts in the same criteria. In other words, the Government's legal duty to consult with aboriginal groups can arise even where aboriginal rights have only been asserted and not yet legally proven. Whether an aboriginal right exists and the nature, extent and scope of that right is group and fact specific. The existence of aboriginal rights is generally established through litigation involving extensive historical and anthropological evidence or through historic or modern treaties. Determining the nature, extent and scope of "historic treaty" rights can also present challenges. The wording in "historic treaties" can be difficult to interpret. For instance, the wording of the fishing right in the "Douglas Treaties" entered into in the 1850's in British Columbia provides that the aboriginal groups who were signatories have the right "to carry on our fisheries as formerly". Although section 35 of the Constitution of Canada contains a general statement that all existing aboriginal and treaty rights are "recognized and affirmed", the challenges described above can make it difficult to "recognize" what specific aboriginal rights may belong to a particular aboriginal group and or their exact nature and scope. Regardless of this difficulty, as noted above, the Government's duty to consult with an aboriginal group may arise even where aboriginal rights have only been asserted and are not yet legally proven. In order to meet this condition DFO will provide a report summarizing how the management system addresses issues regarding aboriginal and treaty rights related to the sockeye salmon fisheries. This report will be provided by December 2010.
Observations from 1st Surveillance	In response to this condition and similar conditions (29, 34, 36a), DFO submitted a document to the assessment describing their commitment to "compliance with all legal and most of the customary rights of First Nation peoples that are impacted by the fishery". DFO's objective is to manage fisheries to ensure that, after conservation needs are met, First Nations' food, social and ceremonial requirements and treaty obligations have first priority in salmon allocation. Aboriginal programs including AFS, ATP, AAROM, Treaties and PICFI provide the policy basis for meeting the objectives of providing opportunities to First Nations to meet their FSC needs. Comprehensive Fisheries Agreements and input into the North Coast and South Coast IFMPs are important components for meeting the objectives for aboriginal fisheries. Opportunities to become involved in the management and planning of the fishery are provided through bilateral, sub-regional and regional consultation processes. Opportunities to share technical information are provided for in the consultation processes.
Conclusion from 1st Surveillance Report	**Given the information provided by DFO regarding their commitment to "compliance with all legal and most of the customary rights of First Nation peoples that are impacted by the fishery", this condition has been met for Fraser sockeye. The score for this indicator has been raised to 80 and the condition has been closed out.**

Condition 30	Same as Condition 17. Certification will be conditional until the management agency provides reasonable estimates of the harvest of white sturgeon and steelhead, by May 2012. (**Fraser Condition #3.7**).
Assessed Activity	This Condition relates to Indicator 3.7.4 PI: The management system solicits the cooperation of the fishing industry and other relevant stakeholders in the collection of data on the catch and discard of non-target species and undersized individuals of target species. 100 Scoring Guidepost • The majority of fish harvesters and processors are in compliance with management requests for the collection of data on catches and discards of non-target species and undersized individuals of target species. • Continued improvement in the quality and quantity of catch and discard data is evident. 80 Scoring Guidepost • Sufficient numbers of fish harvesters and processors comply with requests for data on catches and discards of non-target species and undersized individuals of target species to ensure that reliable estimates of total catches and discards for the fishery can be obtained. 60 Scoring Guidepost • Catch and discard data provided by the fishing industry and other relevant stakeholders are sufficient to manage the harvests from the majority of the non-target species and undersized individuals from the majority of the target species. **SCORE 70** The management agency's detailed submission for Fraser sockeye (DFO Fraser 2003c, p.42) suggested that a score of 70 was appropriate for this indicator. Wilson (2005) agreed with the DFO assessment for this indicator. However, the Team found that reliable estimates for sturgeon and steelhead bycatch are not available from all harvesters for sockeye fisheries in the lower Fraser River. The Team's opinion is that the catch reporting is sufficient to manage the majority of non-target species harvested. While it is important that the catch reporting be improved for Fraser sturgeon and steelhead caught in Fraser sockeye fisheries, these species do not represent the majority of the non-target species harvested in Fraser sockeye fisheries. The Team's score was 70.
DFO Action Plan	Duplication of Condition 17 and 24 on Sturgeon. With respect to Steelhead, any releases from commercial, recreational, or First Nations fisheries would be accounted for through the same catch estimation process that is used to estimate sturgeon releases. Additionally, observer programs have been utilized in order to estimate the impact upon steelhead of fall commercial chum fisheries, and some chum-directed First Nations Economic Opportunity fisheries (beach seines). The time-frame for generating estimates of sturgeon and steelhead catch (and releases) varies by fishery, but all fisheries will have estimates available within a month of the fishery occurring. Most fisheries will have these estimates available within a few days. To satisfy this condition DFO will develop a two year program (e.g. census based and/or observer based) to estimate the impact of Fraser River sockeye fisheries on sturgeon beginning in 2009. The need for further work will be assessed according to the results of this program. A report summarizing the work will be completed in May, 2011.
Observations from 1st Surveillance	The AT has not been provided any evidence of improvements to the catch monitoring systems for Fraser sockeye that would ensure that "reasonable, reliable, and defensible estimates of the harvest of white sturgeon and steelhead" are available within a reasonable time frame. In addition, the AT has not been provided any evidence that "sufficient numbers of fish harvesters and processors comply with requests for data on catches and discards of non-target species and undersized individuals of target species to ensure that reliable estimates of total catches and discards for the fishery can be obtained."
Conclusion from 1st Surveillance	**This condition will be evaluated at the next surveillance audit.**

Report	
Client Progress 2nd Surveillance	The client progress regarding improving monitoring systems used to estimate sturgeon bycatch has been described under Condition 17. DFO has not provided any evidence that they have implemented the two year program (e.g. census based and/or observer based) to estimate the impact of Fraser River sockeye fisheries on sturgeon, as identified in their Action Plan.
Observations from 2nd Surveillance	All of the observations provided Condition 17 regarding bycatch monitoring, are relevant to the evaluation of Condition 30. No evidence was provided that "sufficient numbers of fish harvesters and processors comply with requests for data on catches and discards of non-target species and undersized individuals of target species to ensure that reliable estimates of total catches and discards for the fishery can be obtained."
Conclusion from 2nd Surveillance Report	Based on the information presented to date, the team's conclusion is that the requirements of Condition 30 have not been met. The AT concluded that this condition is behind target as it was not met on the agreed schedule. As such, the AT have specified an additional milestone and deliverable timeframe in keeping with the requirements defined by the MSC Certification Requirements, version 1.2, Section 27.22, subnote 116: *Those fisheries who signed a certification contract prior to 7 February 2011 may apply the following in place of 27.22.8.1 b i:* *If progress against an interim milestone is judged to be behind target, the CAB shall specify the remedial action required, and if relevant, further milestones and scores to be achieved, and the time frame by which the milestone shall be achieved.* The progress has not been sufficient to meet the requirements for the SG80 scoring issues. The client must provide compliance reporting statistics that demonstrate that the single SG80 scoring issue has been met.

3.4 Barkley Sound Conditions – Principle 1

Condition 9	Certification will be conditional until an assessment is completed regarding the effect of Henderson Lake enhancement efforts on non-enhanced stocks, within one year (**Barkley Sound Condition #1.1**).
Assessed Activity	This Condition relates to Indicator 1.1.1.5 PI: Where stock units are composed of significant numbers of fish from enhancement activities, the management system provides for identification of the enhanced fish and their harvest without adversely impacting the diversity, ecological function or viability of unenhanced stocks. 100 Scoring Guidepost • Fisheries targeting enhanced stocks are geographically removed from unenhanced stocks and separate terminal harvest areas are established for these fisheries. • Times and areas have been identified where the majority of enhanced fish migrate through the general fishery. • There is real time mark recovery program during the prosecution of the fishery that allows determination of harvest rates of the enhanced component of the run and this data is used in regulation of the fishery. 80Scoring Guidepost • In fisheries where both enhanced and un-enhanced stocks are harvested at the same time, the harvest guidelines are based on the goals and objectives established for the un-enhanced stocks. • There are adequate data and analyses to determine that the presence of enhanced fish in the management units do not adversely impact the unenhanced fish stocks. 60 Scoring Guidepost • There is general scientific agreement within the management agency regarding the impacts of enhanced fish on the resultant harvest rates or escapements of un-enhanced fish stocks. • Managers have some scientific basis for assuring that harvest rates for enhanced stocks are not adversely affecting the majority of un-enhanced stocks within each stock unit. **SCORE 75** The management agency's detailed submission for Barkley Sound sockeye (DFO Barkley Sound 2003a, p.11) suggested that this indicator was not applicable because the target stocks are not directly enhanced through hatchery releases. Nelson (2005) contended that the annual fertilization of Great Central Lake (GCL) is an enhancement activity. The Team accepted DFO's argument that the fertilization of GCL has reduced the productivity differences between the two target sockeye stocks and thus made the mixed stock fishery easier to manage. At the time of our initial assessment, the Henderson Lake hatchery was the only enhancement activity (200,000 fry released per year) associated with Barkley Sound sockeye. Sockeye fry were marked with strontium, but there has not been any assessment of whether this marking approach will be sufficient to separate hatchery from wild fish. The Team considered that the numbers of sockeye fry produced by the Henderson Lake hatchery were probably too low to have a significant effect on the unenhanced stock. However, the Team concluded that the available data was not adequate to determine the effect of the enhancement initiative on unenhanced stocks. The Team's score was 75.
DFO Action Plan	This 80% scoring guidepost for this indicator was only partially met: "there are adequate data and analyses to determine that the presence of enhanced fish in the management units does not adversely impact the un-enhanced fish stocks." Hatchery operations ceased for Henderson sockeye in brood year 2007. Therefore, this indicator is no longer relevant. Regardless, in the last few years of production, strontium marking and later calcein marking allowed the portion of hatchery production to be estimated.

	These results will be published in a PSARC stock assessment research paper February, 2010. Any future enhancement of this stock will be accompanied by marking and assessment protocols to monitor the impact of enhancement.
Observations from 1st Surveillance	A draft PSARC status report was completed for Henderson Lake sockeye salmon (Dobson and O'Brien 2011). The sockeye hatchery operated from 1988 to 2006; it is now closed. The status report noted that the period of decline for Henderson sockeye corresponded with the inception of the hatchery program and hypothesized that disease documented in the hatchery may have contributed to the decline of the wild population. Production of sockeye smolts in Henderson Lake is strongly density dependent indicating that large releases of subyearling hatchery sockeye salmon could have a negative effect on wild salmon production. The contribution of hatchery salmon to adult returns was highly variable, averaging 20%. Estimated exploitation rates, based on numerous assumptions, averaged 12% since 1997 with peaks in 1997-1998 of about 23% (Labelle et al. 2009). The Labelle et al. report also estimated exploitation rates on Great Central Lake and Sprout Lake sockeye salmon. Dobson and O'Brien concluded that future plans for mitigation or enhancement should include an assessment program so that production benefits (and potential detriments) can be assessed against performance standards. **Table 9: Estimated production statistics for Henderson Lake Sockeye. Total Recruits by brood year are calculated by applying age sample compositions from escapement to the total return. A constant assumption of 10% survival is applied to the hatchery release to estimate the hatchery proportion of smolt production.**

Brood Year	Spawners	Smolt Estimates		Lake Smolts	Proportion Recruits Hatchery**	Wild Recruits	Recruits/ Spawner	ln(Recruits/ Spawner)	Total Recruits
		Hatchery Release	Hatchery Smolts*						
1981	58,000			3,785,000		6,319	0.11	-2.22	6,319
1982	36,700			4,298,000		9,107	0.25	-1.39	9,107
1983	31,000			3,517,000		60,399	1.95	0.67	60,399
1984	73,400			4,255,000		28,890	0.39	-0.93	28,890
1985	18,500			960,000		49,425	2.67	0.98	49,425
1986	3,900			25,000		20,736	5.32	1.67	20,736
1987	30,800			2,067,000		54,857	1.78	0.58	54,857
1988	40,300			2,571,000		200,973	4.99	1.61	200,973
1989	40,600			1,680,000		45,368	1.12	0.11	45,368
1990	31,400			659,000		39,447	1.26	0.23	39,447
1991	38,100			947,000		9,447	0.25	-1.39	9,447
1992	27,700	70,000	7,000	899,000	0.01	107,863	3.89	1.36	108,710
1993	180,500	659,000	65,900	5,462,000	0.01	110,241	0.61	-0.49	111,587
1994	17,400	658,000	65,800	330,000	0.20	17,658	1.01	0.01	22,056
1995	4,400	206,000	20,600	26,000	0.79	1,158	0.26	-1.33	5,578
1996	59,900	862,000	86,200	1,965,000	0.04	38,365	0.64	-0.45	40,126
1997	46,200	1,025,000	102,500	49,000	0.90	1,950	0.04	-3.17	19,502
1998	92,100	860,000	86,000	2,058,000	0.04	8,232	0.09	-2.41	8,591
1999	13,400	1,200,000	120,000	1,066,000	0.11	2,538	0.19	-1.66	2,860
2000	25,100	1,900,000	190,000	2,136,000	0.09	1,751	0.07	-2.66	1,922
2001	19,900	2,100,000	210,000	1,824,000	0.12	2,650	0.13	-2.02	2,994
2002	17,700	2,300,000	230,000	1,367,000	0.17	11,294	0.64	-0.45	13,578
2003	3,300	783,000	78,300	1,227,000	0.06	3,960	1.21	0.19	4,251
2004	2,600	755,300	75,530	830,000	0.09				
2005	1,300	97,750	9,775	634,000	0.02				
2006	3,600	1,558,240	155,824	482,000	0.32				
2007	12,500			1,756,900					
2008	13,100								
Average	33,693	1,002,286	100,229	1,743,552	0.20	36,202	1.3	(0.6)	37,684

* assumes 10% survival from release to smolt.
** assumes proportion is equal to the estimated hatchery smolt by total estimated smolt number. with the exception of brood year 1997, hatchery was assumed to contribute 90% of production.

Conclusion from 1st Surveillance Report	**Good progress has been made but the condition may not be closed out until year 2 rather than year 1 as planned. DFO completed a draft status review of Henderson Lake sockeye salmon. A final report is expected in late 2011 after completion of the CSAS review process. As noted above, this draft report contains information required by this condition. This condition can closed out when the final report is produced in late 2011.**
Client Progress	DFO confirmed that the draft PSARC/CSAS report on Henderson Lake sockeye has not been

2nd Surveillance	finalized.
Observations from 2nd Surveillance	The AT has been told that there are no substantive issues regarding the draft report and expect to be able to close out this condition once this important report has been finalized and can be referenced in our report to the MSC.
Conclusion from 2nd Surveillance Report	Based on the information presented to date, the team's conclusion is that the requirements of Condition 9 have not been met. The AT concluded that this condition is behind target as it was not met on the agreed schedule. As such, the AT have specified an additional milestone and deliverable timeframe in keeping with the requirements defined by the MSC Certification Requirements, version 1.2, Section 27.22, subnote 116: *Those fisheries who signed a certification contract prior to 7 February 2011 may apply the following in place of 27.22.8.1 b i:* *If progress against an interim milestone is judged to be behind target, the CAB shall specify the remedial action required, and if relevant, further milestones and scores to be achieved, and the time frame by which the milestone shall be achieved.* The finalized report must be provided to the assessment team by the 3rd surveillance audit, the condition can be closed out upon receipt and review of that report.

Condition 10	Certification will be conditional until a more reliable escapement estimates are available for Henderson Lake sockeye, within one year (**Barkley Sound Condition #1.2**).
Assessed Activity	This Condition relates to Indicator 1.1.2.2. fin PI: Estimates exist of the spawning escapement for each stock unit. 100 Scoring Guidepost • Estimates are available for the annual escapement for each stock unit harvested in the fishery. • In-season escapement data are collected for all stock units and used to regulate the fishery. 80 Scoring Guidepost • Estimates are available for the annual escapement of each target stock harvested in the fishery. • Fishery independent indicators of abundance are available for the non-target species harvested in the fishery. • In-season escapement data are collected for the target stocks and used to regulate the fishery. 60 Scoring Guidepost • Escapement estimates for target stocks are available, where escapement estimates are necessary to protect the target stock from overexploitation. • Fishery independent indicators of abundance are available for non-target stocks where the fishery harvests may represent a significant component of the harvest of that stock. **SCORE 77** The management agency's detailed submission for Barkley Sound sockeye (DFO Barkley Sound 2003a, p.16) suggested that a score of 100 was appropriate for this indicator. Nelson (2005) indicated that one of the 60 scoring guidepost was not met because "escapement to Henderson Lake (a non-target stock) is not done regularly. The Team found that annual estimates of escapement were available for the Henderson Lake stock but the reliability of these estimates is questionable. The Team's score was 77.
DFO Action Plan	This 80% scoring guidepost for this indicator was only partially met: "fishery independent indicators of abundance are available for the non-target species harvested in this fishery." Since the MSC 2005 assessment, several upgrades were made to the Henderson Lake sockeye assessment program for both juvenile and adult monitoring. The counting fence structure was upgraded in the summer of 2005; panels were improved and a floating structure was put in

	place to reduce breach events. As well, the mechanical counters were upgraded to pulsar counters and observer calibrations were conducted regularly to validate the pulsar counts. To back up the fence operation, swim surveys of Clemens Creek were reinstated to estimate escapement through the AUC method. As it turns out, the swim surveys are the more reliable method due to continued breach events of the fence structure. We are now relying on these estimates and annually survey the system about 6 times per year. Details of the assessment program will be reported in a PSARC stock assessment research paper February, 2010. Future efforts at a directed counting operation will likely involve use of hydro-acoustic technology (i.e. a 'DIDSON' counter) as opposed to a counting fence.
Observations from 1st Surveillance	Escapement counts in Henderson Lake began in 1915 but more systematic counts began in 1981 as part of the Lake Enrichment Program (Dobson and O'Brien 2011). Beginning in 1981, peak live counts and area under the curve (AUC) counts of sockeye salmon were generated for Clemens Creek, the major spawning area. AUC estimates typically involved three or more surveys except during 2001-2005, a period when escapement and returns were low. During the period when two or fewer counts were made, a fence count on the outlet river was reportedly used as the best available count (see Table 10 below). However, the best escapement count in Table 10 did not correspond to the fence count in these years. Stream life is needed to apply the AUC method, yet there was no mention of stream life information. Furthermore, Hyatt et al. 2003 (www.dfo-mpo.gc.ca/csas/Csas/proceedings/2003/PRO2003_016_E.pdf) reported that stream life was too variable to apply to the escapement counts. Modelling efforts recognize that there is uncertainty in the escapement counts and that the counts underestimate total spawning escapement because beach spawners are not enumerated (Labelle et al. 2009). **Table 10: Summary of escapement observations of Henderson Lake sockeye, 1981 to 2008. Best estimate is identified in the last column.**

Return Year	No. Surveys	Clemens Peak Live	Clemens AUC	Fence Count	Brood Removals	Escapement
1981	4		57,961			58,000
1982	3		36,712			36,700
1983	4		30,992			31,000
1984	4	36,171	73,426			73,400
1985	4	7,640	18,527			18,500
1986	8	1,679	3,894			3,900
1987	6	4,478	30,818			30,800
1988	6	15,652	40,268			40,300
1989	7	17,463	40,611			40,600
1990	8	16,688	31,367			31,400
1991	7	2,747	38,084			38,100
1992	7	16,250	27,669		70	27,700
1993	6	119,188	179,824		659	180,500
1994	5	7,200	16,751		658	17,400
1995	6	1,541	4,223		206	4,400
1996	6	21,503	59,037		862	59,900
1997	3	18,779	45,144		1,025	46,200
1998	4	28,192	91,258	18,178	860	92,100
1999	6	4,412	12,232	3,782	1,200	13,400
2000	4	11,876	23,182	24,165	1,900	25,100
2001	2	3,533	6,020	19,809	2,100	19,900
2002	1	531		17,085	2,300	17,700
2003	1	2,333		2,742	783	3,300
2004	0			2,064	755	2,600
2005	2	809	1,181	1,871	98	1,300
2006	3	1,055	2,065	4,925	1,558	3,600
2007	4	4,735	12,452	1,004		12,500
2008	3	5,690	13,090			13,100

Conclusion from 1st Surveillance Report	**Good progress has been made but this condition may not be closed out until year 2 rather than year 1 as planned. Escapement counts of sockeye salmon in Henderson Lake were documented in the draft status report, as noted above. The report documents the uncertainty (e.g., number of fish counts per year) in the estimates and notes that counts since 2005 are likely more reliable because more counts per year have been made. However, the final status report should describe how stream life was estimated (or assumed) and used in the area under the curve estimates. The final report should also clarify discrepancies in the fence count versus total escapement count during 2001-2005 when the fence count was used as the best available count. This condition will be rescored when the final PSARC report on Henderson Lake sockeye is finalized and details associated with escapement estimates for 2009 and 2010 are provided.**
Client Progress 2nd Surveillance	DFO (Diana Dobson) has reported that escapement survey effort increased in 2011 to improve reliability of escapement estimates as part of work related to the Maa-nulth Treaty. A counting fence on Clements Creek is not feasible due to flashy flows. For 2012, DFO will be adding a mark-resight program to directly estimate parameters such as survey life and observer efficiency, and sampling will increase. Models are also being developed to improve escapement estimation, so DFO should have estimates of uncertainty associated with escapement. DFO/Maa-nulth may do some work using DIDSON technology at the end of Henderson Lake – negotiations are ongoing with the Maa-nulth. DFO also reported a sockeye escapement estimate of 25K for Henderson Lake in 2011 but no documentation on the survey effort or analyses method was provided.
Observations from 2nd Surveillance	The reported progress is promising but some documentation of the survey effort, analysis method and resulting escapement estimates for 2010 and 2011 need to be provided.

Conclusion from 2nd Surveillance Report	Based on the information presented to date, the team's conclusion is that the requirements of Condition 10 have not been met. The AT concluded that this condition is behind target as it was not met on the agreed schedule. As such, the AT have specified an additional milestone and deliverable timeframe in keeping with the requirements defined by the MSC Certification Requirements, version 1.2, Section 27.22, subnote 116: *Those fisheries who signed a certification contract prior to 7 February 2011 may apply the following in place of 27.22.8.1 b i:* *If progress against an interim milestone is judged to be behind target, the CAB shall specify the remedial action required, and if relevant, further milestones and scores to be achieved, and the time frame by which the milestone shall be achieved.* As indicated after the 1st audit, this condition could be closed out after the Henderson Lake PSARC report (Dobson and Obrien, draft 2011) has been finalized and details regarding recent escapement estimates are provided to the AT. The report to be provided to the assessment team by the third audit.

Condition 11	Certification will be conditional until a LRP has been defined for Henderson Lake and there is no significant scientific disagreement regarding this LRP. These tasks should be completed within two years (**Barkley Sound Condition #1.3**).
Assessed Activity	This Condition relates to Indicator 1.1.3.1 PI: Limit Reference Points or operational equivalents have been set and are appropriate to protect the stocks harvested in the fishery. 100 Scoring Guidepost • The Limit Reference Point for target species have been reviewed and found to be scientifically defensive and appropriate by the Pacific Scientific Advice Review Committee or the appropriate Pacific Salmon Commission technical committee. • There is general agreement among regional fisheries scientist outside the management agency that the LRP's are appropriate. • There is general scientific agreement regarding the LRP's for non-target species. 80 Scoring Guidepost • There is some scientific basis for the LRP's for target stocks and these LRP's are defined to protect the stocks harvested by the fisheries. • There is no significant scientific disagreement regarding the LRP's used by the management agency to formulate management decision for the fishery. 60 Scoring Guidepost • There is general agreement among regional fisheries scientist within the management agency that the LRP's or equivalent are appropriate to achieve the management goals for target stocks. **SCORE 75** The management agency's detailed submission for Barkley Sound sockeye (DFO Barkley Sound 2003a, p.21) suggested that a score of 80 was appropriate for this indicator. Nelson (2005) indicated that none of the scoring guidepost were met because "DFO has not established LRPs for target stock". Nelson clearly did not accept the interim LRP for Somass sockeye as an adequate LRP for management of the target sockeye stocks. The Team did not agree with Nelson's point of view but recognized that there is some scientific disagreement regarding the LRP used by the management agency and thus the second guidepost at the 80 SG was only partially met. The Team's score was 75.
DFO Action Plan	To satisfy these conditions DFO will fully implement 'Strategy 1' of our WSP. 'Strategy 1' of the WSP requires standardized monitoring of wild salmon status, including identification of upper and lower benchmarks to represent biological status and guide harvest decisions. Implementing this strategy requires identification of Conservation Units (CUs)6 for salmon:

	the scale at which the WSP aims to maintain biodiversity and at which benchmarks (LRPs and TRPs) will be defined. There are various definitions of lower and target reference points in relation to resource management. In the context of the WSP, the lower benchmark (LRP) will be established at a level high enough to ensure there is a substantial buffer between it and being considered at risk of extinction by COSEWIC. As defined in the WSP: "the buffer will account for uncertainty in data and control of harvest management. There is no single rule to use for determination of the lower benchmark. Rather, it will be determined on a case by-case basis, and depend on available information, and the risk tolerance applied…." The upper benchmark (TRP) will be established to identify whether harvests are greater or less than the level expected to provide, on an average annual basis, the maximum annual catch for a CU, given existing environmental conditions.
Observations from 1st Surveillance	Progress has been made and the condition is on target to be closed out in year 2. The Wild Salmon Policy Pilot is underway for Area 23 sockeye salmon. The objective of the pilot is to develop a local area management plan that takes into account the productivity of all stocks. Biological reference points are being developed using previously approved methodologies (Holt et al. 2009, Grant et al. 2010). Further work is required both within and outside DFO to reach consensus on the LRP for Henderson sockeye salmon.
Conclusion from 1st Surveillance Report	**Given progress to date, the AT expected that the management agency will meet the requirements of the 80 level guideposts within the required time frame of 2 years.**
Client Progress 2nd Surveillance	DFO reported that work is being done to implement the Wild Salmon Policy in Area 23 and the Maa-nulth treaty, and both require development of reference points for Henderson sockeye. The Henderson stock is data-deficient in some aspects – there is not enough to support stock recruit analysis. Carrie Holt's work all requires stock recruit. There has been some discussion about alternatives. The joint Maa-nulth/ DFO technical committee has developed fishery reference points but we haven't developed the WSP lower benchmark. DFO has estimates of lake carrying capacity (with and without lake fertilization), and average escapement. Lake carrying capacity could be used as an estimate of the target for Henderson Lake sockeye.
Observations from 2nd Surveillance	No estimate of the LRP for Henderson sockeye has been provided.
Conclusion from 2nd Surveillance Report	Based on the information presented to date, the team's conclusion is that the requirements of Condition 11 have not been met. The AT concluded that this condition is behind target as it was not met on the agreed schedule. As such, the AT have specified an additional milestone and deliverable timeframe in keeping with the requirements defined by the MSC Certification Requirements, version 1.2, Section 27.22, subnote 116: *Those fisheries who signed a certification contract prior to 7 February 2011 may apply the following in place of 27.22.8.1 b i:* *If progress against an interim milestone is judged to be behind target, the CAB shall specify the remedial action required, and if relevant, further milestones and scores to be achieved, and the time frame by which the milestone shall be achieved.* This condition can be met once DFO provides the LRP, or operational equivalent, for Henderson Lake and evidence is provided that there is no significant scientific disagreement regarding this LRP. This evidence is to be provided by the third surveillance audit.

Condition 12	Certification will be conditional until evidence has been provided that the productivity of non-target stocks was considered when the interim TRP was defined for Somass sockeye, by May 2012. (**Barkley Sound Condition #1.4**).
Assessed Activity	This Condition relates to Indicator 1.1.3.2 PI: Target Reference Points or operational equivalent have been set. 100 Scoring Guidepost

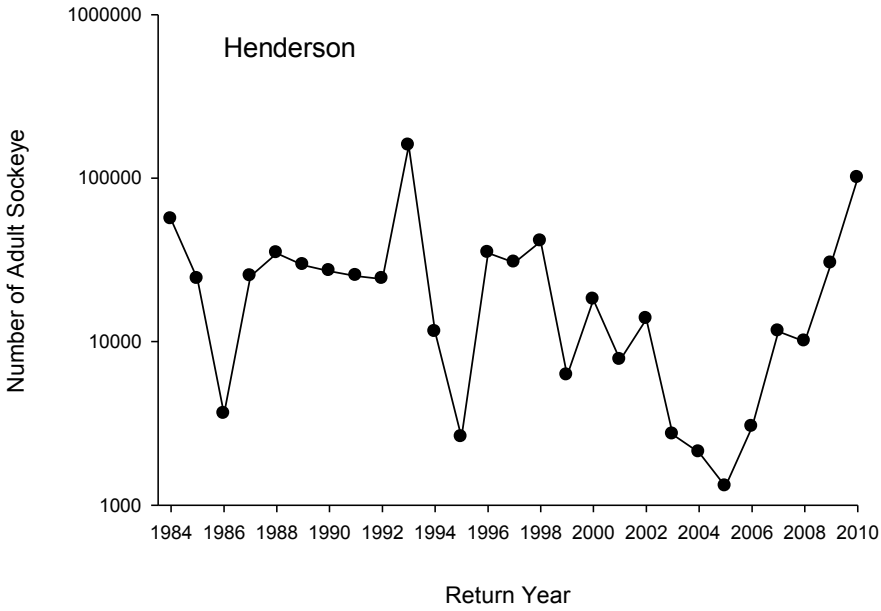
	• The Target Reference Point (TRP) for target species have been reviewed and found to be scientifically defensive and appropriate by the Pacific Scientific Advice Review Committee or the appropriate Pacific Salmon Commission technical committee. • There is general agreement among regional fisheries scientist outside the management agency that the TRP's are appropriate. • The TRP's for the target stocks take into account variability in the productivity of each component of the target stock and productivity of non-target stocks. 80 Scoring Guidepost • There is no significant scientific disagreement regarding the TRP's used by the management agency to formulate management decision for the fishery. • The TRP's for the target stocks take into account variability in the productivity of each component of the target stock and the productivity of non-target stocks. 60 Scoring Guidepost • There is general agreement among fisheries scientist within the management agency that the TRP's are appropriate for the target stocks. • Target reference points have been defined for the majority of target stocks harvested in the fishery and these target reference points are not scientifically disputed. • The management agency has taken into account the relative productivity of non-target stocks when setting the TRP's for the majority of target stocks. **SCORE 75** The management agency's detailed submission for Barkley Sound sockeye (DFO Barkley Sound 2003a, p.21) suggested that a score of 100 was appropriate for this indicator. Nelson (2005) indicated that none of the scoring guidepost were met because "DFO has not established target reference points for individual target stocks". Nelson clearly did not accept the interim TRP for Somass sockeye as an adequate TRP for management of the target sockeye stocks. The Team did not agree with Nelson's point of view but the management agency has not provided any evidence that the productivity of non-target stocks was considered when the interim TRP was defined for Somass sockeye. Therefore, one of the 80 scoring guideposts was only partially met and the Team's score was 75 for this indicator.
DFO Action Plan	To satisfy these conditions DFO will fully implement 'Strategy 1' of our WSP. 'Strategy 1' of the WSP requires standardized monitoring of wild salmon status, including identification of upper and lower benchmarks to represent biological status and guide harvest decisions. Implementing this strategy requires identification of Conservation Units (CUs) 6 for salmon: the scale at which the WSP aims to maintain biodiversity and at which benchmarks (LRPs and TRPs) will be defined. There are various definitions of lower and target reference points in relation to resource management. In the context of the WSP, The lower benchmark (LRP) will be established at a level high enough to ensure there is a substantial buffer between it and being considered at risk of extinction by COSEWIC. As defined in the WSP: "the buffer will account for uncertainty in data and control of harvest management. There is no single rule to use for determination of the lower benchmark. Rather, it will be determined on a case by-case basis, and depend on available information, and the risk tolerance applied…." The upper benchmark (TRP) will be established to identify whether harvests are greater or less than the level expected to provide, on an average annual basis, the maximum annual catch for a CU, given existing environmental conditions.
Observations from 1st Surveillance	Progress has been made. The Wild salmon Policy Pilot is underway for Area 23 sockeye salmon. The objective of the pilot is to develop a local area management plan that takes into account the productivity of all stocks. In addition, implementation of the Maa-Nulth Treaty requires abundance-based allocation of Henderson sockeye salmon. Biological reference points are being developed using previously approved methodologies (Holt et al. 2009, Grant et al. 2010). Labelle et al. (2009) reconstructed sockeye returns to Henderson, Sproat and Great Central lakes and estimated exploitation rates on each stock during 1997-2007. The draft Henderson Lake status report (Dobson and O'Brien 2011) provides productivity estimates of Henderson Lake sockeye salmon.

Conclusion from 1st Surveillance Report	**Given progress to date, the AT expects that the management agency will meet the requirements of the 80 level guideposts within the required time frame of 2 years.**
Client Progress 2nd Surveillance	DFO reported that the management plans take into account productivity, with flexibility to move the fishery. This has always been in the IFMP. With WSP implementation, DFO has developed in-season rules. The plan assumes productivity for the two Barkley Sound target stocks is similar. DFO has worked with harvesters to set out what would happen in season if these assumptions appear to be incorrect for a given year. The approach would be to lower the TAC to respond to lower productivity. This has been approved with all stakeholders. This was not evident in the IFMP but stakeholders have agreed to this general process.
Observations from 2nd Surveillance	The TRPs for target stocks are based on the best target for Somass sockeye. DFO does not adjust the Somass TRP for Henderson Lake sockeye because these stocks are separated in time and place, so they adjust the fishing opportunities. The above plan indicates how DFO would adjust fishing plans, depending on returns.
Conclusion from 2nd Surveillance Report	**The above approach is consistent with the requirements for the second SG80 scoring issue. The score for this indicator has been raised to 80 and the condition has been closed out**

3.5 Barkley Sound Conditions – Principle 2

Condition 20	Barkley Sound Sockeye Salmon Condition #1. Certification will be conditional until Limit Reference Points or their equivalent have been defined for Barkley Sound sockeye salmon stocks, with particular reference to Henderson Lake sockeye, and recovery plans have been developed and implemented for stocks harvested in Barkley Sound sockeye fisheries that are below their LRP. The proposed recovery plans must provide information regarding the probability of recovery and the timing for recovery. To be completed by May 2012. (**Barkley Sound Condition 2.1**)
Assessed Activity	This Condition relates to Indicator 2.3.1. PI: Management strategies include provision for restrictions to the fishery to enable recovery of non-target stocks to levels above established LRPs (Limit Reference Points). 100 Scoring Guidepost • The management plans and escapement goals have been shown to have a high (>80%) probability of achieving a long-term recovery of depleted non-target stocks using risk analysis. • Historic data have been thoroughly examined to ensure fisheries restoration objectives are based on the likely habitat capacity, rather than on trends that cover only the most recent decades, thus avoiding the "moving baseline" syndrome. • Monitoring and assessment programs are established to determine with a high degree of confidence and in a timely manner that recovery is occurring. • Proposed management strategies have been reviewed and found to be scientifically defensible and appropriate by the Pacific Scientific Advice Review Committee or the appropriate Pacific Salmon Commission technical committee. • The management system supports the collection of data on non-fishing related human activity in the development of recovery plans for non-target stocks. 80 Scoring Guidepost • The management system includes assessment of plans for the recovery of non-target stocks to levels above established LRPs. • Objectives for recovery have at least some consideration of historic documents on stock abundance. • The management system has a reasonable (>60%) probability of achieving long-term recovery of depleted non-target stocks. • Monitoring and assessment programs are established to determine with a high degree of confidence and in a timely manner that recovery is occurring.

	• Escapement goals will be revised periodically to accommodate new data indicating success or failure of existing recovery plans. • The management system considers the impact of non-fishing related human activity in the development of recovery plans for non-target stocks. 60 Scoring Guidepost • The management system attempts to prevent extirpation of non-target stocks and does have rebuilding strategies for the majority of the stocks. • The management system has at least a 50% probability of achieving long-term recovery of depleted non-target stocks. • The management system has a strategy for periodic revisiting escapement goals to respond to new data on recovery success or failure for the majority of the stocks. **SCORE 70** The management agencies detail submission for Barkley Sound sockeye (DFO Barkley Sound 2004b, p.16-19) suggested that a score of 95 was appropriate for this indicator with no score for a risk assessment on the likelihood of recovery of depleted stocks and that the requirement for external review at the 100 guidepost level was not applicable. The Barkley Sound fishery issues center around the recovery of Henderson Lake and the likely impact that current fisheries have on this non-targeted stock. The independent review (Nelson 2005) suggested that DFO failed second guidepost at the 60 level for the Henderson Lake sockeye stock. At the 80 scoring level, the Team agreed with Nelson (2005) that LRPs have not been established for non-target stocks and the available information does not support a high probability of the recovery of the Henderson stock. The first, third, fourth and sixth guideposts at the 80 level were considered partially met, primarily because of the lack of a completed recovery plan for this stock. There was information provided on the previous activities addressing nutrients and trophic status so partial score was given on the latter scoring criteria at the 80 level. In the absence of a recovery plan, the reassessment of escapement goals is not assured (guidepost five). Although there have been a significant number of management actions that have taken place to reduce harvest rates, confidence in the stock reconstruction is lacking and there is no reliable estimate of harvest rates of returning Henderson Lake sockeye. Without a completed recovery plan and reliable interception data of Henderson sockeye salmon, the effectiveness of the current management regime in the recovery of the Henderson stocks is uncertain. Although a formal risk analysis would also be desirable as part of the recovery plan, obtaining information and providing analysis as to the current harvest rates by time and area of Henderson Lake sockeye is of highest priority. The Team found that all of the 60 scoring guideposts were met because DFO has taken measures to prevent the extirpation of non-target stocks. While it is difficult to distinguish between a 50% probability of achieving long-term recovery at the 60 scoring level and a 60% at the 80 scoring level, the Team found that the management system has taken actions to reduced the impact of fisheries on the Henderson Lake sockeye stock in recent years and the fishery is no longer the major factor determining the recovery of this stock. The Team's score for this indicator was 70, primarily based on the lack of a recovery plan and inadequate support for estimation of harvest rates on Henderson stocks.
DFO Action Plan	These 80% scoring guideposts for this indicator were only partially met: "The management system includes assessment of plans for the rebuilding of non-target stocks to levels above established LRPs; The management system has a reasonable (>60%) probability of achieving long-term rebuilding of depleted non-target stocks; Monitoring and assessment programs are established to determine with a high degree of confidence and in a timely manner that rebuilding is occurring." Management actions to meet Condition 20 are discussed in the general section above, including the work plan for developing reference points and decision rules for management of Area 23 sockeye populations. While provisional reference point and decision rules already

	exist, these will be reviewed and potentially revised through implementation of DFO's WSP planned for Area 23 starting late 2008. Notwithstanding WSP implementation, the current stock status of Henderson Lake sockeye is likely not depleted. In each of the last two years (2007, 2008), escapement has been estimated at over 10,000 based on swim surveys. While the biological LRP is not yet defined, it is likely well below 10,000. Moreover, we now know that the counting fence operation is a poor indicator of abundance. Unfortunately, it was the sole source of escapement estimates during the very low period of observations from 2001 to 2005. It was likely escapement was higher than the fence estimates, however anecdotal observations from spawner observations do suggest the abundance was low during this period. We are also working to improve the estimates of harvest rate on Henderson origin sockeye. All fisheries have been sampled for DNA stock composition analysis since 2006. However, even given our catch sampling efforts, it is statistically difficult to estimate harvest rate directly due to the relative rarity of Henderson sockeye in the fishery. In 2004, a deterministic run-reconstruction was submitted to the MSC assessment team. This run reconstruction was based on conservative assumptions and suggested the average harvest rate of Henderson sockeye was less than 15%. Over the last two years, an independent scientific authority was contracted (Dr. Marc Labelle) to estimate harvest rate parameters for Henderson sockeye using an alternative dynamic simulation model. Results from this simulation are similar to those of the run reconstruction and will be reported in the stock assessment research paper to be submitted to PSARC in October, 2009. LRPs will be defined for Barkley sockeye stocks and a report submitted to Certifier by December, 2011.
Observations from 1st Surveillance	Progress has been made. Provisional reference points exist for Barley Sound sockeye salmon, but these will be reviewed and potentially revised through implementation of DFO's WSP, as noted previously. The status of Henderson Lake sockeye salmon was described by Dobson and O'Brien (2011, in publication) and an updated graph of total adult abundance was provided by DFO (see below). Abundance of Henderson sockeye salmon has increased steadily since exceptionally low abundance in 2005, suggesting the current status is not depleted. Factors contributing to the decline of Henderson sockeye salmon were evaluated in the status report. A dynamic simulation model was developed to estimate exploitation rates of Henderson, Sprout and Great Central Lake sockeye salmon, 1997-2007 (Labelle et al. 2010). This analysis indicated the exploitation rate on Henderson Lake sockeye averaged 12% and peaked at 23% in 1997-1998.  **Figure 13. Henderson Lake sockeye abundance. (Source: DFO Powerpoint Presentation**

	on Barkley Sound Conditions, May 2011.)
Conclusion from 1st Surveillance Report	**Although a formal recovery plan has not been developed for Henderson sockeye salmon, the status of the stock was evaluated and status has improved steadily during the past 5 years. The IFMP describes the stock concerns, fishery objectives and in-season decision points pertaining to the Barkley Sound fishery.** **Evidence now exists showing that exploitation rates have been relatively low (avg. 13%) during recent years. Given progress to date, the AT expects that the management agency will meet the requirements of the 80 level guideposts within the required time frame of 2 years.**
Client Progress 2nd Surveillance	The Labelle (2009) report provides scientifically defensible estimates of the exploitation rates for Henderson Lake sockeye. Recent returns to Henderson Lake indicate that this stock is currently above any reasonable estimate of its LRP.
Observations from 2nd Surveillance	Evidence has been provided that management system has included provisions to restrict fisheries to enable the recovery of non-target stocks (i.e. Henderson Lake sockeye) and Henderson Lake sockeye returns have exceeded its LRP level in recent years.
Conclusion from 2nd Surveillance Report	**The requirements for the 80 level SGs associated with this condition have been met and therefore, the score for this indicator has been raised to 80.**

3.6 Barkley Sound Conditions – Principle 3

Condition 31	**Same as Condition 20. (Barkley Sound Condition #3.1).**
Assessed Activity	This Condition relates to Indicator 3.1.4 PI: When dealing with uncertainty, the management system provides for utilizing the best scientific information available to manage the fishery, while employing a precautionary approach. 100 Scoring Guidepost • The management system provides for the routine assessment of the level of uncertainty in the information collected for management and establishes management controls to address these uncertainties using the best available scientific information and a precautionary approach. • The management system implements research efforts to address data gaps. • For newly developing fisheries for which there is very limited data and information, the management system implements controls on the development of the fishery that are precautionary in nature. • The management system always quantitatively evaluates the effect of implementation uncertainty (the tendency for actual harvest rates or escapements to differ from those intended by the management regulations) on the effectiveness of the proposed management actions. 80 Scoring Guidepost • The management system provides for some assessment of the level of uncertainty in the information collected for management and establishes management controls which take into account these uncertainties, using the best available scientific information and a precautionary approach. • In situations when precautionary measures are necessary to manage the fishery, the management system calls for increasing research efforts in order to fill data and information gaps. • In most cases where there are newly developing fisheries, the management system implements controls on the development of the fishery that are precautionary in nature. • The management system considers the effect of implementation uncertainty on the effectiveness of most of the proposed management actions. 60 Scoring Guidepost

	• The management system for the majority of newly developing fisheries is consistent with a precautionary approach. • The management system considers the effect of implementation uncertainty on the effectiveness of the majority of the proposed management actions. **SCORE 77** The management agency's detailed submission for Barkley Sound sockeye (DFO Barkley Sound 2003c, p.8) suggested that a score of 100 was appropriate for this indicator. Nelson (2005) agreed with the DFO scoring for this indicator. However, the Team found that the management agency has not shown a clear commitment to define and implement action plans and increase research efforts to fill data gaps for the depleted Henderson Lake sockeye stock. The Team's score was 77.
DFO Action Plan	These conditions will be met in part through implementation of the WSP, particularly Strategy 4, as described above. Strategy 4 requires development of an integrated strategic plan for salmon management that clearly states conservation, habitat and ecosystem objectives. Moreover, strategy 5 requires annual review of the plan's ability to meet these objectives. For Barkley and Skeena sockeye fisheries, Strategy 4 and 5 will be implemented over the next 3 years. For Fraser sockeye fisheries, Strategy 5 will be implemented over the next 3 years. In addition, over the next two years, DFO will be revising the format for Integrated Fisheries Management Plans (IFMPs). The new IFMP template is much more fishery specific and requires elements not included in past IFMPs, such as stock status, a socioeconomic overview and summary of management issues. Development of these IFMPs will require many of the gaps identified in the conditions to be addressed.
Observations from 1st Surveillance	Progress has been made. Provisional reference points exist for Barley Sound sockeye salmon, but these will be reviewed and potentially revised through implementation of DFO's WSP, as noted previously (see 2010/2011 Integrated Fisheries Management Plan –Southern BC Salmon). The status of Henderson Lake sockeye salmon was described by Dobson and O'Brien (2011) and an updated graph of total adult abundance was provided by DFO (see Figure 12 above). Abundance of Henderson sockeye salmon has increased steadily since exceptionally low abundance in 2005, suggesting the current status is not depleted. Factors contributing to the decline of Henderson sockeye salmon were evaluated in the status report. A dynamic simulation model was developed to estimate exploitation rates of Henderson, Sprout and Great Central Lake sockeye salmon, 1997-2007 (Labelle et al. 2010). This analysis indicated the exploitation rate on Henderson Lake sockeye averaged 12% and peaked at 23% in 1997-1998. These recent efforts have enhanced the knowledge of factors affecting Henderson sockeye salmon, including the effects of salmon harvests.
Conclusion from 1st Surveillance Report	**This condition is on target for closing out during year 2, as planned, when a document with limit reference points is provided.**
Client Progress 2nd Surveillance	DFO has provided evidence through recent reports (Dobson and O'Brien 2011; Labelle et al. 2010) and recent agreements with local First Nations that several important data gaps have been fill or proposed to be filled through increased research efforts.
Observations from 2nd Surveillance	The Dobson and O'Brien (2011) is a draft document and should be finalized so any recommendations in this document can be referenced and implemented.
Conclusion from 2nd Surveillance Report	**For this indicator, the AT accepts the draft documents as sufficient evidence the requirements of the 2nd SG80 guidepost have been met and therefore, the score for this indicator has been raised to 80.**

Condition 32	Certification will be conditional until the management agency provides clear evidence that measures are being implemented to encourage harvesters not to exceed catch targets or exploitation rate limits, within two years. (**Barkley Sound Condition #3.2**).
Assessed Activity	This Condition relates to Indicator 3.1.8 PI: The management system provides for socioeconomic incentives for sustainable fishing. 100 Scoring Guidepost • The management system has formal procedure for providing social and economic incentives to stakeholders in the fishery to develop and utilize sustainable fishing practices, particularly the development of selective fishing gear and practices that lead to improved conservation. • The management system creates strong incentives for harvesters to not exceed target catches or exploitation rates. • The stakeholders in the fishery regularly avail themselves of the opportunity to utilize these incentives. • Evidence provided by the management system demonstrates that such incentives have contributed to improved conservation. • The management system continually attempts to understand the impact of their decisions on social and economic factors affecting the stakeholders in the fishery and regularly takes action to mitigate the impacts on stakeholders. 80 Scoring Guidepost • The management system regularly considers the use of social and economic incentives to the stakeholders in the fishery, which are designed to facilitate the development of fishing gear and practices that can lead to sustainable fishing • The management system includes a program to create incentives for harvesters to not exceed target catches or exploitation rates. • Evidence demonstrates that the stakeholders in the fishery have used such incentives. • The management system attempts to understand the impact of their management decisions on social and economic factors affecting the major stakeholders in the fishery and takes action to lessen the major impacts on stakeholders. 60 Scoring Guidepost • The management system provides for the use of social or economic incentives to ensure sustainable fishing. • The management system attempts to understand the impact of its decisions on social and economic factors affecting the stakeholders in the fishery and is responsive to requests to reduce these impacts. **SCORE 77** The management agency's detailed submission for Barkley Sound sockeye (DFO Barkley Sound 2003c, p.21) suggested that a score of 97 was appropriate for this indicator. Nelson (2005) suggested that two of the 80 scoring guideposts were not met because "it does not appear as there are incentives developed (penalties exist) to encourage compliance". The Team found that the lack of any defined allocations for Barkley Sound sockeye makes it virtually impossible to discourage harvesters from exceeding catch targets or exploitation rate limits. As indicated for Fraser sockeye, First Nation treaties provide an avenue for defining salmon allocations and penalizing those that exceed these limits by reducing their harvest opportunities in future years. The Team's score was 77.
DFO Action Plan	This 80% scoring guidepost for this indicator was only partially met: "the management system includes a program to create incentives for harvesters not to exceed target catches or exploitation rates." The assessment team incorrectly assumed that there are no defined allocations for Barkley Sound sockeye. The Barkley sockeye management table (attached) defines allocations at

	various run sizes for First Nation, Sport and Commercial fisheries. Incentives are provided to harvesters to discourage over-harvest. Probably the most important incentive is our co-management initiative that allows harvesters flexibility in fishing plans and technical input through participation in the 'Area 23 Harvest Committee'. Because this is a table of peers (fishers from different sectors: First Nation, Sport, Commercial), harvesters are accountable and face pressure from other stakeholders to harvest according to manageable fishing plans. This committee has been in operation since 2005. The Somass Joint Technical Working Group, which also started in 2005, includes local First Nations biologists and fishery managers, who contribute to in-season decision-making regarding run forecasting. Since the inception of these co-management processes, no harvest sector has exceeded their allocation. In 2007 when the return was very low and below forecast, harvesters voluntarily curtailed their fisheries in season. In 2008, when the pre-season forecast was below the fishable abundance, harvesters agreed to delay (and eventually abort) harvest plans. A report describing compliance of harvesters in the Barkley sockeye fishery will be provided to the Certifier by December, 2010.
Observations from 1st Surveillance	The Integrated Fisheries Management Plan summarizes harvest management of Barkley Sound sockeye salmon. Fishing plans are developed at the Area 23 harvest round table meeting in early May; the meeting includes commercial gillnet, set net, recreational fisheries, and First Nations. Each of these sectors is identified with a specific allocation under the harvest strategy, e.g., see Table 11 below. Under the new MaaNulth Final Agreement, allocations are identified as per treaty. Weekly fishery bulletins are published that provide in-season information on escapement, stock composition, test fishing results, in-season forecast, and fishing opportunities for each sector. According to DFO, no harvest sector has exceeded their allocation since inception of the co-management processes. For example, in 2007, when the return was very low and below forecast, harvesters voluntarily curtailed their fisheries in-season. In 2008, when the preseason forecast was below fishable abundance, harvesters agreed to delay and eventually abort harvest plans. The variable harvest rate strategy allows for some harvest at escapement below optimal, and the escapement target is met in most years, as shown in figure 13 below. **Table 11: Key decision points for Barkley Sound sockeye.** **Run Size** / First Nations (FSC) Fisheries / **Recreational Fisheries** / **Commercial Fisheries** Less than 200,000 / No harvest / No harvest / No harvest 200-210,000 / Harvest initiated / No harvest / No harvest 210-240,000 / Harvest / No harvest / No harvest 240-400,000 / Harvest / Harvest initiated / No harvest Greater than 400,000 / Harvest / Harvest / Harvest initiated 2010/2011 Integrated Fisheries Management Plan – Southern BC Salmon Page 83 of 160

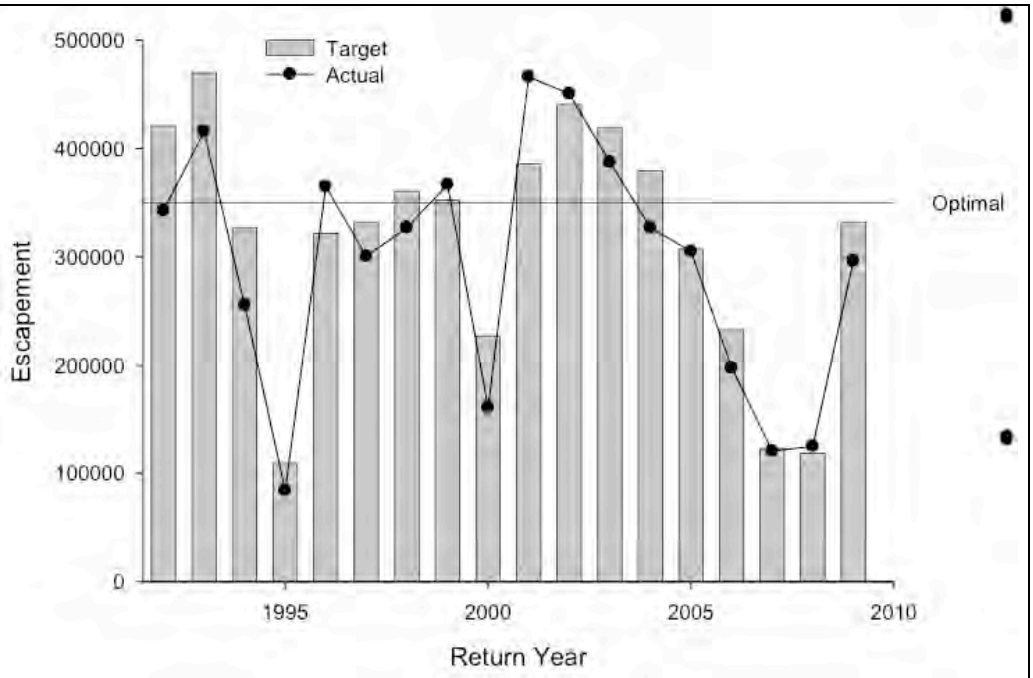


Figure 14: Variable harvest rate strategy used for Barkley Sound sockeye.

Conclusion from 1st Surveillance Report	**Given progress to date, the AT expects that the management agency will meet the requirements of the 80 level guideposts within the required time frame of 2 years.**
Client Progress 2nd Surveillance	ITQs for local purse seine vessels and the salmon allocations defined in the Maa-nulth Final Agreement are good examples of mechanisms that provide incentives for harvesters not to exceed target catches or exploitation rates.
Observations from 2nd Surveillance	As long as DFO continues to implement these mechanism, they will meet the requirements of the 2nd 80 level SG.
Conclusion from 2nd Surveillance Report	**For this indicator, the AT accepts these above management actions as sufficient evidence the requirements of the 2nd SG80 guidepost have been met and therefore, the score for this indicator has been raised to 80.**

Condition 33	Certification will be conditional until the management agency provides a research plan that addresses identified concerns related to the impact of the fishery on the ecosystem, with emphasis on non-target stocks, and takes into consideration socioeconomic factors and anticipated changes to fisheries. These tasks should be completed in three years (**Barkley Sound Sockeye Condition #3.3**).
Assessed Activity	This Condition relates to Indicator 3.2.1. PI: The research plan covers the scope of the fishery, includes all target species, accounts for the non-target species captured in association with, or as a consequence of fishing for target species, and considers the impact of fishing on the ecosystem and socioeconomic factors affected by the management program. 100 Scoring Guidepost • The management system incorporates a research component that considers relevant data and information needs for formulating management strategies for all target species, and also information leading to an understanding of the dynamics of the ecosystem including data on the catch, landings and discards of non-target species. • The framework for research includes investigations dealing with socioeconomic impacts of the fishery. • The research plan responds in a timely fashion to unexpected changes in the fishery. • Funding is secure and sufficient to meet long-term research needs. • There is significant continuing progress in understanding the impact of the fishery on target and non-target species, and the ecosystem in general. • Research results form the basis for formulating management strategies and decisions. • Research is regularly published in peer review journals and/or is reviewed by PSARC or the PSC. 80 Scoring Guidepost • The management system incorporates a research component that provides for the collection and analysis of information necessary for formulating management strategies and decisions for both target and non-target species. • The research plan addresses concerns related to the impact of the fishery on the ecosystem. • The research plan addresses socioeconomic issues that result from the implementation of management. • The research plan is responsive to changes in the fishery. • Funding is adequate to support short-term research needs. • There is progress in understanding the impact of the fishery on target and non-target species. • Research results are utilized in forming management strategies. • Research is reviewed by PSARC or PSC, or other appropriate and technically qualified entities. 60 Scoring Guidepost • Research provides for the collection of catch statistical and biological data for the target species. • There has been useful research on the impact of fishing on target and non-target species taken in the fishery, and on the ecosystem in general. **SCORE 73** The management agency's detailed submission for Barkley Sound sockeye (DFO Barkley Sound 2003c, p.23) suggested that a score of 95 was appropriate for this indicator. Nelson (2005) suggested that three of the 80 scoring guideposts were not met because of deficiencies in the research related to fishery impacts on marine mammals and understanding Henderson Lake sockeye. The Team found that the lack of any research plan for Barkley Sound sockeye makes it difficult to assess whether the plan addresses concerns related to the impact of the fishery on the ecosystem, socioeconomic issues that result from the implementation of management plans, or if the research plan is responsive to changes in the fishery. The Team's score was 73.

DFO Action Plan	The requirement to include ecosystem values and objectives in planning process is an element of the WSP. It is also an element of the new IFMP template described above that will be implemented for salmon fisheries starting in 2012. To addresses the need to include other objectives (ecosystem, socio-economic) in the planning process and assess performance against these objectives, we will need to re-align our current reporting and/or re-allocate research resources. DFO has developed a Resource Assessment Framework for Fraser River sockeye (PSARC review in May 2008) to help guide assessment priorities based on the biological status and knowledge gaps for each CU. Once LRPs are developed for each CU, they will be integrated into the assessment framework. The Fraser sockeye assessment framework will serve as a template for other CUs.
Observations from 1st Surveillance	Progress is being made. DFO stated that ecosystem values and objectives will be considered in the planning process as part of WSP implementation. Ecosystem values and research activities were briefly noted in the 2011 IFMP. The 2010 IFMP did consider interactions between fisheries and marine mammals and birds throughout southern BC. The Area 23 harvest round table meets weekly during the season and discusses research programs and management strategies. It was reported that Dr. K. Hyatt is developing a research plan.
Conclusion from 1st Surveillance Report	**Progress is satisfactory for this condition which is expected to be closed out in year 3.**
Client Progress 2nd Surveillance	DFO's research plan for Barkley Sound sockeye is under development. The plan includes high-level values on maintaining production. People may articulate how the fishery is important to them. There is a parallel process underway to develop a local stewardship framework for Area 23. DFO and area stakeholders are participating in a process led by West Coast Aquatic to develop this framework. There will be a research plan in the local area management plan that DFO is developing. It will include early season indicators, a plan for doing stock status and harvest strategy reviews, work to understand habitat and fertilization, limiting factors, climate change and stock composition/fishery impact modelling. During the site audit, DFO provided a broad description of what would be included in their stock assessment plan but details were not provided. DFO subsequently provided a copy of the preliminary Salmon Stock Assessment 2012-13 Business Plan and a preliminary list of proposed salmon assessment projects for the 2012-13 season. A copy of the salmon integrated stock assessment plan was not provided.
Observations from 2nd Surveillance	The information provided includes planning and budgeting considerations for this season.
Conclusion from 2nd Surveillance Report	Based on the information presented to date, the team's conclusion is that the requirements of Condition 33 have not been met. The AT concluded that this condition is behind target as it was not met on the agreed schedule. As such, the AT have specified an additional milestone and deliverable timeframe in keeping with the requirements defined by the MSC Certification Requirements, version 1.2, Section 27.22, subnote 116: *Those fisheries who signed a certification contract prior to 7 February 2011 may apply the following in place of 27.22.8.1 b i:* *If progress against an interim milestone is judged to be behind target, the CAB shall specify the remedial action required, and if relevant, further milestones and scores to be achieved, and the time frame by which the milestone shall be achieved.* This condition remains incomplete until a stock assessment plan or research plan has been provided and evaluated. Based on information provided, the team expects this to be delivered by the third surveillance audit.

Condition 34	Same as Condition 29. (**Barkley Sound Condition #3.4**).
Assessed Activity	This Condition relates to Indicator 3.6.3 PI: The management system provides for the observation of legal and customary rights of First Nation peoples.

	The DFO submissions were essentially identical for all fisheries and suggested that all guideposts were met for each fishery (DFO Fraser 2004c, p. 57-59; DFO Barkley Sound 2004c, p. 47-49; DFO Skeena 2004c, p. 54-55; DFO Nass 2004c, p. 54-55). The Team found that the Fraser, Barkley Sound and Skeena fisheries did not pass one of the guideposts at the SG80 because of concerns expressed by First Nation representatives regarding their access to sockeye for food, social and ceremonial purposes (see section on scores below 80). It was surprising that the submission for the Nass did not make any reference to the Nisga'a Treaty (a comprehensive land claims treaty which included fishing rights for salmon) which has been in effect since 11 May 2000. The Team found that the successful negotiation and implementation of the Nisga'a Treaty was sound evidence that all guideposts have been met and thus the score for this indicator was 100 for the Nass fishery. 100 Scoring Guidepost • The management system is in compliance with all major legal and customary rights of First Nation peoples that are impacted by the fishery. • The management system includes processes for consultation with First Nations peoples on the impact of the commercial fishery on their food, social and ceremonial fisheries. 80 Scoring Guidepost • The management system is found to be in compliance with all legal and most of the customary rights of First Nation peoples that are impacted by the fishery. • The management system includes processes for providing information to First Nations peoples on the major impacts of the commercial fishery on their food, social and ceremonial fisheries. 60 Scoring Guidepost • The management system is in compliance with the legal rights of First Nation peoples that are impacted by the fishery. **SCORE 75** The management agency's detailed submission for Barkley Sound sockeye (DFO Barkley Sound 2003c, p.48-49) suggested that a score of 100 was appropriate for this indicator. The submissions by the client indicate that DFO believes it has met its First Nations obligations to protect and manage for food, social, and ceremonial harvest by First Nations. However, in consultation with First Nations and conservations groups, the Team was provided with information suggesting that several of the First Nations that harvest Barkley Sound sockeye would not agree the management system is in compliance with all the legal and most of the customary rights of First Nation peoples that are impacted by the Barkley Sound sockeye fishery. Nelson (2005) did not score this indicator. The Team found that the first guidepost at the SG80 was not met and thus the Team's score was 75.
DFO Action Plan	Treaty-making with aboriginal peoples has a long history in Canada. The Crown began entering into treaties with aboriginal groups in the early 1700's, which continued until the 1920's. These are referred to as "historic treaties". In the 1970's, treaty-making resumed resulting in "modern treaties" which are generally more complex and detailed than "historic treaties". "Modern treaties" continue to be negotiated in various parts of Canada. In 1982, section 35 was added to the Constitution of Canada. Section 35 provides "constitutional protection" to aboriginal rights and rights under both "historic treaties" and "modern treaties". The Supreme Court of Canada has held that the "constitutional protection" of aboriginal rights and treaty rights means that any infringement of such a right must be justified. The Supreme Court of Canada has also held that aboriginal rights to fish for "food, social and ceremonial" purposes have priority, after conservation, over fishing for commercial or recreational purposes. From a Canadian perspective, it is important to distinguish between an aboriginal right to fish for food and an aboriginal right to fish for "livelihood". The proposed Performance Indicators under this category merge these two distinct concepts in the same criteria.

	In other words, the Government's legal duty to consult with aboriginal groups can arise even where aboriginal rights have only been asserted and not yet legally proven. Whether an aboriginal right exists and the nature, extent and scope of that right is group and fact specific. The existence of aboriginal rights is generally established through litigation involving extensive historical and anthropological evidence or through historic or modern treaties. Determining the nature, extent and scope of "historic treaty" rights can also present challenges. The wording in "historic treaties" can be difficult to interpret. For instance, the wording of the fishing right in the "Douglas Treaties" entered into in the 1850's in British Columbia provides that the aboriginal groups who were signatories have the right "to carry on our fisheries as formerly". Although section 35 of the Constitution of Canada contains a general statement that all existing aboriginal and treaty rights are "recognized and affirmed", the challenges described above can make it difficult to "recognize" what specific aboriginal rights may belong to a particular aboriginal group and or their exact nature and scope. Regardless of this difficulty, as noted above, the Government's duty to consult with an aboriginal group may arise even where aboriginal rights have only been asserted and are not yet legally proven. In order to meet this condition DFO will provide a report summarizing how the management system addresses issues regarding aboriginal and treaty rights related to the sockeye salmon fisheries. This report will be provided by December 2010.
Observations from 1st Surveillance	In response to this condition and similar conditions (29, 34, 36a), DFO submitted a document to the assessment describing their commitment to "compliance with all legal and most of the customary rights of First Nation peoples that are impacted by the fishery". DFO's objective is to manage fisheries to ensure that, after conservation needs are met, First Nations' food, social and ceremonial requirements and treaty obligations have first priority in salmon allocation. Aboriginal programs including AFS, ATP, AAROM, Treaties and PICFI provide the policy basis for meeting the objectives of providing opportunities to First Nations to meet their FSC needs. Comprehensive Fisheries Agreements and input into the North Coast and South Coast IFMPs are important components for meeting the objectives for aboriginal fisheries. Opportunities to become involved in the management and planning of the fishery are provided through bilateral, sub-regional and regional consultation processes. Opportunities to share technical information are provided for in the consultation processes.
Conclusion from 1st Surveillance Report	**Given the information provided by DFO regarding their commitment to "compliance with all legal and most of the customary rights of First Nation peoples that are impacted by the fishery", this condition has been met for Barkley Sound sockeye. The score for this indicator has been raised to 80 and the condition has been closed out.**

3.7 Skeena Conditions – Principle 1

Condition 13	Certification will be conditional until a peer reviewed (e.g. PSARC) assessment of the impact of production from Pinkut and Fulton spawning channels on wild sockeye stocks has been completed and the TRPs and LRPs have been clearly defined for the un-enhanced sockeye stocks, within two years (**Skeena Condition #1.1**).
Assessed Activity	This Condition relates to Indicator 1.1.1.5. PI: Where stock units are composed of significant numbers of fish from enhancement activities, the management system provides for identification of the enhanced fish and their harvest without adversely impacting the diversity, ecological function or viability of unenhanced stocks. 100 Scoring Guidepost • Fisheries targeting enhanced stocks are geographically removed from unenhanced stocks and separate terminal harvest areas are established for these fisheries. • Times and areas have been identified where the majority of enhanced fish migrate through the general fishery. • There is real time mark recovery program during the prosecution of the fishery that allows determination of harvest rates of the enhanced component of the run and this data is used in regulation of the fishery. 80 Scoring Guidepost • In fisheries where both enhanced and un-enhanced stocks are harvested at the same time, the harvest guidelines are based on the goals and objectives established for the un-enhanced stocks. • There are adequate data and analyses to determine that the presence of enhanced fish in the management units do not adversely impact the unenhanced fish stocks. 60 Scoring Guidepost • There is general scientific agreement within the management agency regarding the impacts of enhanced fish on the resultant harvest rates or escapements of un-enhanced fish stocks. • Managers have some scientific basis for assuring that harvest rates for enhanced stocks are not adversely affecting the majority of un-enhanced stocks within each stock unit. **SCORE 60** The management agency's detailed submission for Skeena sockeye (DFO Skeena 2003a, p.12) suggested that a score of 90 was appropriate for this indicator. Bocking (2005) scoring for this indicator was similar to that provided in the DFO submission. Hill (2007) contended that the two 60 scoring guideposts were not met because he does not believe there is an empirical basis for any internal DFO agreement that may exist regarding the impact of enhancement on un-enhanced fish stocks and he believes that "the majority of weak sockeye stocks are routinely fished at exploitation rates above their estimated MSY". The Team found that there was general scientific agreement within the management agency that the primary target for Skeena sockeye fisheries are the enhanced Babine sockeye produced from the Pinkut and Fulton spawning channels and fisheries targeting these enhanced stocks have had a significant impact on the Skeena's wild sockeye stocks and other co migrating salmon and steelhead. However, recent harvest rates are significantly reduced from historical levels and managers have indicated that the available stock-recruitment data provides a scientific basis that current harvest rates set for the mixed-stock fisheries should not adversely affect the majority of un-enhanced stocks within each stock unit (i.e. Babine and non-Babine sockeye). The Skeena Independent Science Review Panel (ISRP) recommended "a comprehensive assessment of the advantages and disadvantages of either reducing channel production substantially, or eliminating it entirely in favour of sustaining the wild stock fishery." The ISRP identified a number of deficiencies in the information available to assess trends in marine survival and the impact of enhanced stocks on the wild stocks. The reinstatement of the Babine sockeye smolt monitoring program was identified as one of the top priorities. Other scientists

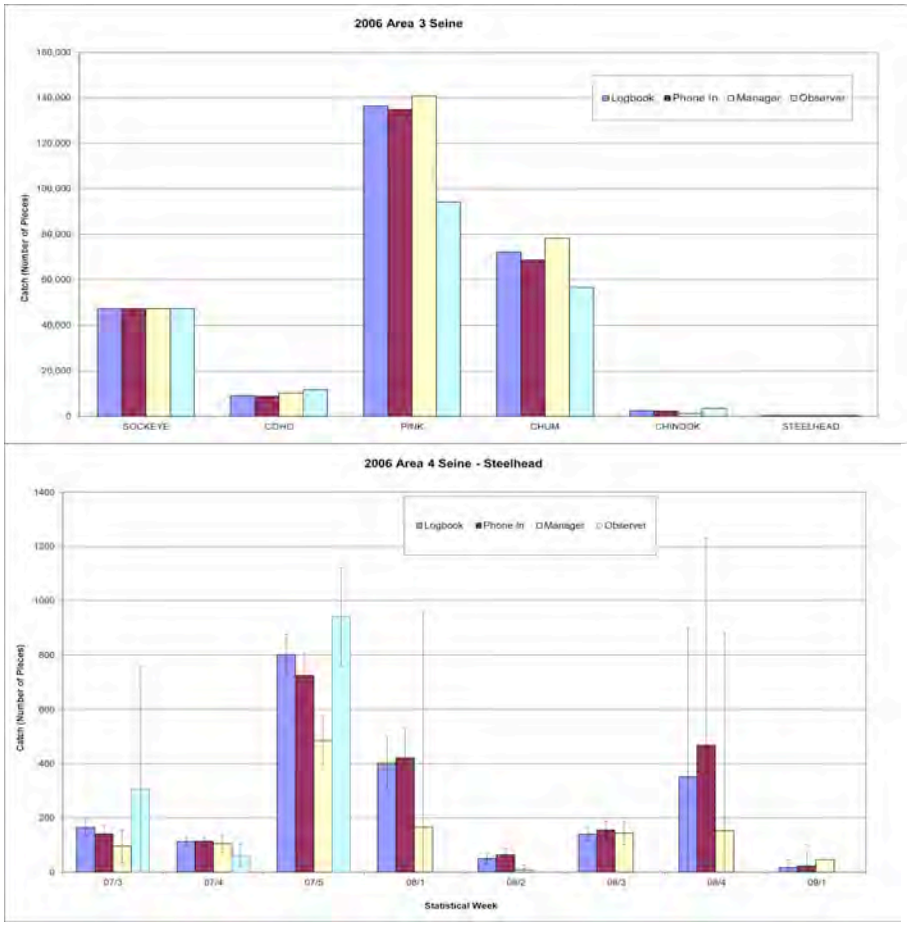
	have proposed provisional LRP's for most of the un-enhanced Skeena sockeye stocks (Wood, 1999) but to date these LRP's have not been formally used in the development of harvest plans for Skeena sockeye. The Team's score was 60.
DFO Action Plan	DFO commits to providing a peer reviewed assessment of the impact of production from the Babine enhanced production on wild Skeena sockeye stocks in a PSARC reviewed stock assessment paper and TRPs and LRPs have been defined for Skeena sockeye CUs (December, 2011).
Observations from 1st Surveillance	Fisheries and Oceans Canada, informed the Assessment team that a Skeena sockeye technical workshop is planned for June, 2011. The proceedings from that meeting will form part of the basis of a report currently in preparation for review by the Canadian Science Advisory Secretariat (CSAS) in December 2011. The report will provide a stock status update for Skeena sockeye, include information from enhanced Babine stocks. Authors will included DFO scientists and at least one First Nation representative. There is a project underway to define benchmarks for all Skeena species, including steelhead. The report from this project was scheduled for review by CSAS in December 2011. DFO is going to provide a backgrounder on escapement & harvest impact info organized by conservation units (CU) to estimate productivity parameters and evaluate potential indicators. One meeting has been conducted to provide methodology and case studies for consideration.
Conclusion from 1st Surveillance Report	**Work is underway and is expected to result in the defined Action Plan deliverable by the second annual surveillance audit.**
Client Progress 2nd Surveillance	Korman and Cox-Rogers (2012) presented preliminary sockeye LRP'S along with estimates of exploitation rates to attain MSY, but there has not yet been sufficient evaluation or discussion to formally define specific LRPs. A workshop was held in January 2012 on the data used in the Korman analysis; a subsequent workshop on the preliminary benchmark analysis was held in April 2012. The next step is to involve First Nations interests in the watershed in a technical workshop to evaluate the data, approaches to estimate benchmarks, and to provide advice on benchmarks. Following the First Nations process the next step in the Pacific Salmon Foundation workplan is to sponsor a third workshop where a broad range of participants evaluate the data, bench mark analysis, and options for each CU. Cox-Rogers and Spilsted (2012) evaluated sockeye production in Babine Lake, including enhanced (spawning channel) and unenhanced spawning populations. A PSARC assessment of the impact of production from Pinkut and Fulton spawning channels on wild sockeye stocks or PSARC review of the Cox-Rogers and Spilsted report has not been completed.
Observations from 2nd Surveillance	Cox-Rogers and Spilsted (2012; report W) provide a comprehensive review of sockeye salmon production in Babine Lake. Approximately 90% of all Skeena River sockeye are from Babine Lake, and of these, an average of 75% have been enhanced fish from Pinkut Creek and Fulton River spawning channels. The analysis attempts to identify factors affecting the declining sockeye production since the late 1990s, but as highlighted by the authors, the analysis is compromised by the cessation of the smolt monitoring program in 2000. Lack of smolt data during the period of decline inhibits quantification of the proportion of the decline that occurred in freshwater versus the ocean. Key conclusions from the report indicate that the late run spawning escapement (wild stocks) is only 30% of the capacity, while the wild mid-timed and early-timed runs are also below the potential spawning capacity. The spawning channels are meeting their escapement targets, and the authors concluded that rearing capacity in the Main Arm (where most enhanced sockeye reportedly rear) appears to be below the capacity to support juvenile sockeye salmon. However, this conclusion should be tempered by the fact that fry to smolt survival has not been estimated since 2000 and, as noted by the authors, stable fry production from the spawning channels during the past decade could have led to cumulative adverse effects on the prey community, e.g., periodic low sockeye fry abundance may be needed for zooplankton abundance to recover, as has been observed in other sockeye systems.

	Although spawning escapements of wild sockeye have declined, the authors concluded that exploitation rates were not the sole cause of the decline because exploitation rates have declined with smaller runs, especially in recent years. The management system has curtailed sockeye harvests in marine waters and shifted harvests of enhanced sockeye to the terminal area near the spawning channels as a means to harvest enhanced fish while allowing most wild sockeye to spawn. Korman and Cox-Rogers (2012; report N) provide a draft analysis of benchmarks for 15 of the 31 sockeye CUs in the Skeena watershed (i.e., all CUs that have data). The benchmarks were based on Sgen1 and Smsy. The authors concluded that the recent decline in production was due to a decline in sockeye productivity rather than to "overfishing" but they also note that fishing at low stock abundances inhibited CU recovery. They also concluded that fishing at the aggregate MSY level (enhanced & wild stocks combined) would lead to overharvest of the wild CUs, whose productivity is lower than the enhanced stocks. The benchmark analysis must undergo peer review and consultation with stakeholders before benchmarks can be adopted.
Conclusion from 2nd Surveillance Report	Based on the information presented to date, the team's conclusion is that the requirements of Condition 13 have not been met. The AT concluded that this condition is behind target as it was not met on the agreed schedule. As such, the AT have specified an additional milestone and deliverable timeframe in keeping with the requirements defined by the MSC Certification Requirements, version 1.2, Section 27.22, subnote 116: *Those fisheries who signed a certification contract prior to 7 February 2011 may apply the following in place of 27.22.8.1 b i:* *If progress against an interim milestone is judged to be behind target, the CAB shall specify the remedial action required, and if relevant, further milestones and scores to be achieved, and the time frame by which the milestone shall be achieved.* This condition was scheduled to be closed during the second year. The management system has made progress on the condition, but additional information and peer review are needed before it can be closed. The Cox-Rogers and Spilsted report provides an analysis of available data on potential density-dependent limitations, but this analysis is limited by the lack of smolt data since 2000, i.e., the primary period of sockeye decline. The Korman and Cox-Rogers draft benchmark analysis will undergo consultation with stakeholders, according to DFO. Ultimately, to meet the intent of this condition, the final benchmark analysis should describe how harvest management will be implemented in the fishery in order to achieve the benchmarks (e.g., apparently by managing timing groups). Furthermore, the benchmark report should describe the extent to which the adopted benchmarks and in-season management will conserve the majority of wild CUs, including the two or three CUs in Babine Lake. These completed documents should be provided by the 3rd surveillance audit.

Condition 13a	Certification is conditional until the management agencies implement a scientifically defensible program for estimating steelhead catch in the Skeena sockeye fisheries, within two years (**Skeena Condition #1.1a**).
Assessed Activity	This Condition relates to Indicator 1.1.2.1. PI: Estimates exist of the removals for each stock unit. 100 Scoring Guidepost • Catch estimates are available for all fisheries in Canadian waters that harvest the target and non-target stocks harvested in the fishery being evaluated. • Mortality rates are available for the fish released or discarded during the fishery. • Catch estimates are available for fisheries outside Canadian waters that harvest the stocks that are the target of the fishery being evaluated. 80 Scoring Guidepost • Catch estimates are available for all target stocks harvested in the fishery. • Catch estimates are available for non-target stocks where the catch of the non-target stock

	may represent a significant component of the harvest of that stock. • Mechanisms exist to ensure accurate catch reporting and these mechanisms are evaluated at least once every 5 years. 60 Scoring Guidepost • Catch estimates for the majority of target stocks are available. • Catch estimates are available for non-target stocks where the catch of the non-target stocks may represent a significant component of that stock. • Mechanisms exist to ensure accurate catch reporting and these mechanisms are evaluated at least once every 10 years. **SCORE 77** The management agency's detailed submission for Skeena sockeye (DFO Skeena 2003a, p.14) suggested that a score of 100 was appropriate for this indicator. Bocking (2005) indicated that two of the 100 scoring guideposts have not been met but all of the 60 and 80 guideposts were met. Hill (2007) contended that one of the 60 scoring guideposts was not met because he believes that "many commercial fishers engage in 'token reporting' and personal retention of non-target bycatch". After a detail review of all the methods used to estimate catch or exploitation rates for Skeena steelhead stocks, the Skeena ISRP concluded that "The state of affairs today is that we actually have no idea how reliable DFO's estimates of steelhead exploitation rates are." While the steelhead bycatch in fisheries targeting Skeena sockeye can represent a significant portion of the harvest of Skeena steelhead, the steelhead harvest rates are believed to be relatively low, and thus a much less significant component of the steelhead stock in most years. However, there is an urgent need to improve the procedures used to estimate the catch for these non-target steelhead stocks. The Team's score was 77.
DFO Action Plan	DFO will develop a program for monitoring the by-catch in Skeena sockeye fisheries including steelhead. Fishery impacts on steelhead have been estimated using a model jointly created by DFO and MOE, and reviewed by PSARC. The Skeena Independent Science Review commented on the model and expressed concern over the uncertainty in the model parameters. As recommended, DFO will work with MOE to develop methods to estimate steelhead impacts from the Skeena sockeye fisheries. A catch monitoring framework will be developed by December, 2011.
Observations from 1st Surveillance	DFO has committed to using the existing data and will prepare a summary of the bycatch in the Fishery Operations System (FOS). Fishery impacts on steelhead are estimated using a model jointly created by DFO and MOE, and initially reviewed by PSARC. There have been changes to the model that merit a fresh evaluation. DFO will use sales slip data from the net fisheries to generate the final volumes for catch and will use the FOS data to generate fishing locations. DFO has requested to the Skeena Watershed Initiative (SWI) that the SWI technical committee support an independent technical review to evaluate the utility of the Skeena model to estimate Steelhead harvest impacts and catch. DFO has reiterated their interest to work with the Province of British Columbia to resolve steelhead issues.
Conclusion from 1st Surveillance Report	**DFO has provided concrete examples of how they intend to use existing information to generate defensible estimates of steelhead bycatch. This condition will be evaluated at the next surveillance audit.** **The CB discussed and agreed with the client that the action plan provided in the Public Certification Report (PCR) is no longer representative of the current fishery management and status. The CB agrees that the client will propose a revised action plan which will be approved by the assessment team prior to next surveillance audit with the intention of evaluating the current condition against a revised action plan.**
Client Progress 2nd Surveillance	Several documents provided estimates of bycatch in the North Coast fisheries (Hall 2012, Peacock 2012, JO Thomas 2010, Ecotrust 2011).

Hall (2012) described an approach to estimate bycatch and overall total catch using logbooks, phone-ins, fishery manager estimates and observer data. The proportions of the total catch for each species retained and released by week were calculated from each data source for seine fisheries in Statistical Areas 3 and 4 in 2006. These species proportions were then multiplied by the target species landed catch from sales slips and divided by the target species proportion from each data source to estimate catch of all species including released bycatch. This method is similar to the method Labelle (1995) used to estimate steelhead bycatch in the 1994 Area 4 net fishery. The 2006 year was selected because there was observer coverage and significant fisheries that occurred that year. The confidence intervals on the proportion shows overlap for all data sources however the proportions from the observer data are the most different, reportedly due to non-random sampling (e.g., larger vessels), and DFO believes each data source provides reasonably similar estimates of bycatch. Examples of estimated catch of all salmon (Area 3) and steelhead (Area 4) in 2006 are shown in the figures below.



Estimated catch (retained and released) of salmon and steelhead from the Area 3 seine fishery in 2006 by species and data source (Hall 2012; report ZJ).

Peacock (2012) estimated bycatch of each species, including steelhead for each Statistical Area (1 to 10) during 2007 to 2011. Released catch for all salmon species was estimated using the species composition (retained and released) reported in logbooks and scaling them to the sales slip reported catch for the target retained species by year, gear, and area. Estimated bycatch of steelhead in Areas 3 & 4 in 2011, for example, was 1,654 by seine and 2,078 by gillnet vessels.

JO Thomas (2010) estimated steelhead bycatch in Areas 3 & 4 (seine and gillnet) during 1989 to 2009 based largely on observer data. Observer data were used to develop species composition in the catch, which was then applied to the reported catch of the target species (usually sockeye) to estimate bycatch on released salmonids. DFO (PPT presentation) compared their estimates with those of JO Thomas (seven pairs). Some pairs were considerably different (e.g., 819 steelhead vs 2080 steelhead in Area 4 seines, 2006) but the JO Thomas values were 22% lower, on average, reportedly because the JO Thomas data did not include the later weeks when steelhead were still present.

Ecotrust (2011) reported retained and released salmonids on seine and gillnet vessels monitored by observers. A total of 139 steelhead were observed on monitored vessels, or 0.0172 steelhead per sockeye in 2011. Observers tended to be on larger vessels. Observers monitored vessels in 2010 (less effort), but a report was not provided.

DFO concluded that there is some consistency in the various methods to estimate bycatch and that the estimates are reasonable given that they consider the bycatch rate on steelhead to be relatively low.

Observations from 2nd Surveillance

Several methods were used to estimate bycatch during several years, including 2010 and 2011. A key issue raised by the Assessment Team was whether the logbook data, which was used for the 2007-2011 bycatch analysis, was biased given that fishermen might under report non-retained species such as steelhead or chum. There was evidence that the steelhead/sockeye ratio observed in the 2011 Ecotrust report was twice that reported in the logbooks. This difference could be due to a variety of reasons. Therefore, the Assessment Team asked DFO to examine the 2010 and 2011 logbook and observer data in more detail and determine whether there was bias in the logbook data, and if so apply a correction factor to the logbook-based values given that these values are available each year.

DFO responded to the AT request and produced a memo that analysed the logbook sockeye/steelhead ratios against those based on observer data, 2006 and 2011 (Hall and Peacock 2012). Although there was variability in the ratios and the area sampled by the two methods was not identical, the DFO analysis suggested that logbooks may under-report steelhead by 50%. Therefore, DFO suggested doubling the logbook-based estimates of steelhead bycatch as a means to estimate total bycatch of steelhead.

DFO also estimated the total escapement of steelhead to the Skeena watershed based on the Moricetown escapement estimates (SKR Consultants 2011), genetic analysis of steelhead in the lower river test fishery, and assumptions of 50% of 100% release mortality. During 2007-2010, estimated bycatch mortality was 2.3% or less, except in 2008 when approximately 13.5% of the run may have been removed, assuming a worst-case scenario of 100% release mortality (see table below).

Steelhead Escapement Estimates for the Skeena Watershed (Hall and Peacock 2012)

Steelhead Escapement Estimates Skeena Watershed

Year	Steelhead M/R Estimate Bulkley Morice * (assumed 20% tag loss)	Bulkley Morice Prop Test Fishery DNA (from DNA lab)	Skeena Watershed Steelhead Escapement	Bycatch Estimates Logbook Gillnet	Bycatch Estimates Gillnet Assume 50% under reporting	Bycatch Estimates Logbook Seine	Total Estimated Steelhead Releases	Estimated Harvest Rate (assuming 100% release mort)	Estimated Harvest Rate (assuming 50% release mort)
1998		16.9							
1999									
2000		26.0							
2001	12,758	30.3	42106						
2002	20,318								
2003	9,720	18.7	51979						
2004	12,536	21.5	58307						
2005	12,273	27.8	44147						
2006	12,110	25.4	47677						
2007	15,258	20.4	74794	689	1378	374	1752	2.3%	1.1%
2008	21,987	33.2	66226	3709	7418	2908	10326	13.5%	6.7%
2009	19,237	25.2	76337	64	128	642	770	1.0%	0.5%
2010	32,912	36.5	90170	470	940	0	940	1.0%	0.5%
2011		16.0		1622	3244	1263	4507		

* Saimoto, R.S. and R.K. Saimoto. 2011. Summary report of Bulkley/Morice River steelhead data collected by the Wet'suwet'en Fisheries during the 2010 Moricetown Tagging Project. Prepared by SKR Consultants Ltd., Final Report submitted to B.C. Ministry of Environment, The Skeena Watershed Initiative, and The Pacific Salmon Foundation.

Conclusion from 2nd Surveillance

The management agency has developed a reasonable approach to estimate bycatch of steelhead in the Skeena sockeye fishery. The estimated harvest rate of steelhead was

Report	**relatively low during 2007-2010. Given the high profile of Skeena steelhead, the AT encourages the management agencies to continue monitoring of steelhead bycatch in the Skeena fishery. This information satisfies the condition and the fishery meets the SG80 guideposts. The condition is closed.**

Condition 13b	Certification is conditional until the management agencies implement the escapement and fall fry monitoring plans for Skeena sockeye as defined in the Core Stock Assessment Review for North and Central Coast salmon stocks or a similar scientifically defensible program to address this key information gap, within two years (**Skeena Condition #1.1b**).
Assessed Activity	This Condition relates to Indicator 1.1.2.2. PI: Estimates exist of the spawning escapement for each stock unit. 100 Scoring Guidepost • Estimates are available for the annual escapement for each stock unit harvested in the fishery. • In-season escapement data are collected for all stock units and used to regulate the fishery. 80 Scoring Guidepost • Estimates are available for the annual escapement of each target stock harvested in the fishery. • Fishery independent indicators of abundance are available for the non-target species harvested in the fishery. • In-season escapement data are collected for the target stocks and used to regulate the fishery. 60 Scoring Guidepost • Escapement estimates for target stocks are available, where escapement estimates are necessary to protect the target stock from overexploitation. • Fishery independent indicators of abundance are available for non-target stocks where the fishery harvests may represent a significant component of the harvest of that stock. **SCORE 77** The management agency's detailed submission for Skeena sockeye (DFO Skeena 2003a, p.15-16) suggested that a score of 90 was appropriate for this indicator. Bocking (2005) suggested that the second guidepost at the 60 SG was only partially met because the Tyee fishery does not provide stock specific indicators of abundance for all species. Hill (2007) contended that the first guidepost at the 60 guideposts was not met because he considers "any sockeye stock subject to harvest in the commercial fishery is a *de facto* target stock". The Team found that the fishery passed these guideposts because fishery independent indicators of abundance are not required for all non-target stocks and the Team assessment has always been based on the premise that the Babine sockeye is target stock for the Skeena sockeye fishery. The Team found that escapement estimates for the non-target sockeye stocks (i.e. non-Babine stocks) were less reliable than those for Babine sockeye. The shift towards management by conservation unit (CU), would require more information on the abundance within each CU. The management agency has recently defined 32 sockeye CUs within the Skeena watershed and the ISRP concluded that "the available data are not sufficient to define escapement trends or assess stock status for 15 of the sockeye CUs". This is flagged as a gap in the current annual stock assessment program that could be addressed by the approaches defined in the Core Stock Assessment Review for North and Central Coast salmon stocks. The Team's score was 77.
DFO Action Plan	DFO will use the existing core stock assessment program to develop and implement a plan for monitoring sockeye escapements. The program will be developed in cooperation with the FN interests in the watershed and may include direct visual escapement surveys, weir counts, and mark recapture programs for adults or hydroacoustic lake surveys to identify juvenile abundance. The Skeena Fisheries Commission has been conducting hydro acoustic estimates in recent years, and DFO will continue to cooperate in planning and funding of these surveys.

	The program will be described in PSARC reviewed stock assessment paper (December, 2011).
Observations from 1st Surveillance	DFO reported they will use the existing core stock assessment program as a base to develop and implement a plan for monitoring sockeye escapements. The program will be developed in cooperation with the FN interests in the Skeena watershed and may include direct visual escapement surveys, weir counts, and mark recapture programs for adults or hydro acoustic lake surveys to identify juvenile abundance. The Skeena Fisheries Commission has been conducting hydro acoustic estimates in recent years, and DFO will continue to cooperate in planning and funding of these surveys. DFO is proposing a Skeena sockeye technical workshop in June 2011. The agenda will include a review and discussion on how to best move forward with designing and implementing the enumeration plan. The recommended enumeration plan will be part of the CSAS report scheduled for completion in December 2011.
Conclusion from 1st Surveillance Report	**A basic approach and workshop were reported as underway. A CSAS peer reviewed report will be produced which should identify the fishery independent indicators of abundance available for the non-target species harvested in the fishery. DFO appear to be on target with meeting their deliverable deadline at the second annual surveillance audit.**
Client Progress 2nd Surveillance	DFO presented their 2012 sockeye core assessment report card (Excel spreadsheet 13b), which shows adult surveys and hydroacoustic fry surveys for each monitored lake/stream in the Skeena watershed. Approximately 26 adult surveys and 23 fall fry surveys are conducted. Most adult surveys are conducted annually, whereas most fall fry surveys are proposed to occur every 2, 3, 4 or even 8 years. The Excel table shows years of the most recent survey. An unpublished report described habitat-based abundance benchmarks for lake sockeye CUs in the Skeena watershed, and compared recent surveys information (2000-2011) with those benchmarks (Cox-Rogers 2012 aka report M). There is evidence that juvenile densities in fall are related to adult abundance (Cox-Rogers 2012 aka PPT J). Approximately 50% of the lakes had some level of monitoring. A published report was presented that reviewed the adult escapement, catch, and runs size for each CU of each species in the north and central coasts (English et al. 2011). An updated Core Stock Review was to be released by DFO in June 2012.
Observations from 2nd Surveillance	A question is whether the monitored populations are representative of unmonitored populations. DFO plans to conduct periodic juvenile density surveys in each lake and compare values with the capacity estimates as a means to evaluate status (Cox-Rogers 2012a, b aka reports M, J).
Conclusion from 2nd Surveillance Report	Based on the information presented to date, the team's conclusion is that the requirements of Condition 13b have not been met. The AT concluded that this condition is behind target as it was not met on the agreed schedule. As such, the AT have specified an additional milestone and deliverable timeframe in keeping with the requirements defined by the MSC Certification Requirements, version 1.2, Section 27.22, subnote 116: *Those fisheries who signed a certification contract prior to 7 February 2011 may apply the following in place of 27.22.8.1 b i:* *If progress against an interim milestone is judged to be behind target, the CAB shall specify the remedial action required, and if relevant, further milestones and scores to be achieved, and the time frame by which the milestone shall be achieved.* Progress has been made, but this condition cannot be closed out until the updated Core Stock review is finalized and it demonstrates the implementation of spawning escapement and fall fry monitoring. The client should provide this document at the 3rd surveillance audit.

Condition 13c	Certification is conditional until the management agencies have implemented the programs necessary to provide periodic assessments of the relative productivity for each Skeena sockeye CU or justification for the use of currently monitored populations as indicator stocks, within two years (**Skeena Condition #1.1c**).
Assessed Activity	This Condition relates to Indicator 1.1.2.4. PI: The information collected from catch monitoring and stock assessment programs is used to compute productivity estimates for the target stocks and management guidelines for both target and non-target stocks. 100 Scoring Guidepost • Scientifically defensible productivity estimates (e.g. stock/recruitment relationships) have been derived for all target stocks and the relative productivity of non-target stocks is known. • Risk assessment has been conducted to determine the impact of alternative harvest strategies on non-target stocks. The risk assessment should include an assessment of the uncertainties with estimates of stock productivity for both the target and non-target stocks. 80 Scoring Guidepost • There is adequate information to identify the harvest limitations and production strategies required to maintain the high productivity of the target stocks. • There is adequate information to estimate the relative productivity of the non-target stocks where the fishery harvests may represent a significant component of those non-target stocks. • The harvest limitations for target stocks take into consideration the impacts on non-target stocks and the uncertainty of the productivity for these stocks. 60 Scoring Guidepost • The available information and analyses are adequate to identify the harvest limitations and production strategies required to maintain the productivity of the majority of target stocks. • The relative productivity of the non-target stocks is considered in the management strategy, where the fishery harvests may represent a significant component of those non-target stocks. **SCORE 77** The management agency's detailed submission for Skeena sockeye (DFO Skeena 2003a, p.18-19) suggested that a score of 90 was appropriate for this indicator. Bocking (2005) concurred with the DFO scoring for this indicator. As indicated above, there is general scientific agreement that the catch of the non-target sockeye stocks in fisheries that target Babine sockeye can represent a significant component of the harvest of those stocks. The Team found that the second guidepost at the 80 SG was not fully met because the data available for some non-target sockeye stocks is not adequate to estimate the relative productivity for these non-target stocks. The fishery passed the second guidepost at the 60 SG because there is evidence in the annual fishing plans that the likely lower productivity for some non-target stocks has been considered in the management strategy for Skeena sockeye fisheries. The Team's score was 77.
DFO Action Plan	DFO commits to providing periodic assessments of the relative productivity for Skeena sockeye CU's, or representative indicators. Our experience has been that the productivity of the sockeye systems are relatively stable, and will place priority on assessments of systems for stocks of concern, those most susceptible to climate change impacts or subject to recent habitat perturbations. The relative productivity will be reviewed in a PSARC stock assessment paper (December, 2011).
Observations from 1st Surveillance	DFO is proposing a Skeena sockeye technical workshop in June 2011. The agenda will include a review and discussion on how to best move forward with designing and implementing the productivity assessments. The recommended plan for productivity assessments will be part of the CSAP report scheduled for December 2011.

	Measure of productivity will be determined by using lake productivity as the basis and then use as proxy for estimating potential productivity in the lakes. While there is stock recruitment information for Babine Lake, it can not be used in the productivity calculation due to effect of enhancement. There is a lot of scientific data available for the watershed but there is not a strong enough time series to generate a stock recruit curve that is stock specific.
Conclusion from 1st Surveillance Report	**A basic approach and workshop were reported as underway. A CSAS peer reviewed report will be produced which should identify the recommended plan for productivity assessments. DFO appear to be on target with meeting their deliverable deadline at the second annual surveillance audit.**
Client Progress 2nd Surveillance	In 2011, the Pacific Salmon Foundation funded a review and analyses of the adult escapement, catch, and runs size for each CU of each species in the north and central coasts (English et al. 2011). Cox-Rogers (2012a, b aka reports J, M) provided primary productivity estimates and smolt rearing capacity estimates for many of the lakes in the Skeena watershed. Cox-Rogers and Spilsted (2012, report W) reviewed production trends since the 1950s from 11 wild Babine populations. These data were used by Korman (2012) and Korman and Cox-Rogers (2012)(aka draft reports L, N) to develop stock-recruitment relationships and sockeye productivity estimates for Skeena stocks where data were available. Babine Lake was identified as a priority candidate for an updated productivity estimate and funding ($175,000) has been obtained (Selbie 2012 aka report X).
Observations from 2nd Surveillance	Primary productivity, juvenile rearing capacity of lakes, and life cycle productivity of ~50% of the sockeye CUs have been developed and reported in draft and/or final reports. A new, one-yr investigation of productivity within Babine Lake is reportedly to begin in 2012. However, there is no indication that enumeration of smolts from Babine Lake, which would provide a key estimate of sockeye productivity during the freshwater versus ocean life stages, will resume.
Conclusion from 2nd Surveillance Report	Based on the information presented to date, the team's conclusion is that the requirements of Condition 13c have not been met. The AT concluded that this condition is behind target as it was not met on the agreed schedule. As such, the AT have specified an additional milestone and deliverable timeframe in keeping with the requirements defined by the MSC Certification Requirements, version 1.2, Section 27.22, subnote 116: *Those fisheries who signed a certification contract prior to 7 February 2011 may apply the following in place of 27.22.8.1 b i:* *If progress against an interim milestone is judged to be behind target, the CAB shall specify the remedial action required, and if relevant, further milestones and scores to be achieved, and the time frame by which the milestone shall be achieved.* Progress has been made. However, the condition will remain open until the stock-recruitment analysis for each non-target sockeye CU (where data are available) and the associated life cycle productivity analyses have been finalized (e.g., draft Korman analysis). This report should provide some evidence, perhaps from productivity surveys of plankton or juvenile salmon, that the unmonitored CUs will be sustained. Finalized report should be provided by the client to the assessment team by the 3rd surveillance audit.

Condition 14	Certification will be conditional until the management agency provides direct evidence that the productivity of non-target stocks has been taken into account when setting the TRP for the target Babine stock, within one year (**Skeena Condition #1.2**).
Assessed Activity	This Condition relates to Indicator 1.1.3.2. PI: Target Reference Points or operational equivalent have been set. 100 Scoring Guidepost • The Target Reference Point (TRP) for target species have been reviewed and found to be scientifically defensive and appropriate by the Pacific Scientific Advice Review Committee or the appropriate Pacific Salmon Commission technical committee. • There is general agreement among regional fisheries scientist outside the management agency that the TRP's are appropriate. • The TRP's for the target stocks take into account variability in the productivity of each

	component of the target stock and productivity of non-target stocks. 80 Scoring Guidepost • There is no significant scientific disagreement regarding the TRP's used by the management agency to formulate management decision for the fishery. • The TRP's for the target stocks take into account variability in the productivity of each component of the target stock and the productivity of non-target stocks. 60 Scoring Guidepost • There is general agreement among fisheries scientist within the management agency that the TRP's are appropriate for the target stocks. • Target reference points have been defined for the majority of target stocks harvested in the fishery and these target reference points are not scientifically disputed. • The management agency has taken into account the relative productivity of non-target stocks when setting the TRP's for the majority of target stocks. **SCORE 77** The management agency's detailed submission for Skeena sockeye (DFO Skeena 2003a, p.22) suggested that a score of 70 was appropriate for this indicator. Bocking (2005) contended that the second scoring guidepost at the SG60 could not be met because it is the same as the second guidepost at the 100 SG, which has not been met. The Team recognizes that these guideposts appear to be redundant because no reference was made to the management agency. Where agreement is required at the 60 guidepost it is generally only required within the management agency. Consequently, the Team agreed with DFO's assessment that they passed the 60 guideposts but did not pass all the 80 and 100 guideposts. The management agency has indicated that historically the TRP for the Babine stock did not take into account the productivity of non-target Skeena stocks. The current TRP for the target Babine sockeye stock is based on the plans to limit harvests in mixed-stock fisheries to levels that take into account the lower productivity of non-target stocks and harvest the surplus production of the Babine stock in areas where only Babine stocks are present (i.e. within the Babine watershed). The WSP calls for the definition of conservations units for each salmon species and the definition of management guidelines for each conservation unit. The Team's score was 70.
DFO Action Plan	As an interim measure for the 2009 fishing season DFO adopted a precautionary management objective of reducing the Canadian commercial exploitation rate on Skeena sockeye to begin rebuilding individual stocks of concern by maintaining on average, a Canadian commercial exploitation rate in the range of 20 to 30%. This represents a reduction of 30 to 50% from recent decade averages. This range was consistent with the advice provided in the Skeena ISRP (Independent Science Review Panel). DFO also supports Recommendation # 1 of the ISRP, "There is a need to confront the major trade-off decisions that are implied by the Wild Salmon policy and the impacts of mixed-stock ocean fisheries on Skeena stocks. There should be an explicit public decision about the loss of biodiversity (number of weak stocks allowed to remain overfished or at risk of extinction) that is deemed acceptable and changes required to fisheries in order to achieve particular harvest objectives." Resolving this issue will be the central focus of the Skeena Watershed Process over the next few years.
Observations from 1st Surveillance	DFO adopted a very precautionary abundance-based management objective beginning in 2009 by significantly reducing the Canadian commercial abundance based exploitation rate targets on Skeena sockeye to begin rebuilding stocks of concern. This management action is consistent with the advice provided in the Skeena ISRP to rebuild weak stocks. Another science activity currently underway is an NSERC grant to conduct an update of the Skeena model. DFO has encouraged inclusion of socioeconomic aspects into this update.
Conclusion from 1st Surveillance Report	**Both the 2010 and 2011 IFMPs for North Coast Salmon define the Skeena River Decision Guidelines and present the abundance-based method to be used to guide fishery openings. This is evidence that there has been consideration of the productivity of non-target stock when setting the TRP proxy (exploitation rate).**

	The team considers that this responds to the requirements second 80 scoring guidepost and as such, this performance indicator is rescored to 80 and the condition closed.

3.8 Skeena Conditions – Principle 2

Condition 21a	Same as new condition 13a. Certification is conditional until the management agencies implement a scientifically defensible program for estimating steelhead catch in the Skeena sockeye fisheries. To be completed within two years. (**Skeena Condition #2.1a**).
Assessed Activity	This Condition relates to Indicator 2.1.1. PI: The management plan for the prosecution of the marine fisheries provides a high confidence that direct impacts on non-target species are identified. 100 Scoring Guidepost • A monitoring program exists that provides estimates of bycatch that meet statistical criteria acceptable to external reviewers. • All historic monitoring data is readily available to stakeholder groups and external reviewers. • Quantities of gear lost are recorded, and the impacts of lost gear on target and non-target species have been researched and accurate projections of impacts have been completed. 80 Scoring Guidepost • A monitoring program exists that provides estimates of bycatch. • In known problem areas of high bycatch, there is an on-going monitoring program. 60 Scoring Guidepost • Data on bycatch in the majority of the fisheries are available to determine impacts on non-target species. **SCORE 70** The management agency's detailed submission for Skeena sockeye (DFO Skeena 2004b, p.1-4) and the independent review (Bocking 2005) suggested that a score of 100 was appropriate for this indicator. However, an independent science review panel (Walters et al. 2008) provided additional analysis that was used by the team to rescore this and all other indicators for Skeena sockeye. Much of the review and information originally provided by DFO was superseded by this document. We agreed specifically with the findings of the ISRP that estimates of DFO of bycatch rates on steelhead have little reliability. The SG60 is passed because there is data on bycatch of steelhead and these data indicated that the Skeena sockeye fisheries represent known high bycatch of steelhead. After a detailed review of all the methods used to estimate catch or exploitation rates for Skeena steelhead stocks, the Skeena ISRP concluded that "The state of affairs today is that we actually have no idea how reliable DFO's estimates of steelhead exploitation rates are." Since there is general scientific agreement that the terminal Skeena sockeye fisheries represent a known area of high bycatch for steelhead, there is an urgent need to improve the procedures used to estimate steelhead bycatch. The condition is necessary because there is a need for an ongoing monitoring program and these types of programs have not been consistently conducted in the past. The Team's score for this indicator was 70 based on the lack of reliability of the steelhead bycatch monitoring program.
DFO Action Plan	DFO in cooperation with the Province of BC will develop a program for evaluating the by-catch in Skeena sockeye fisheries including steelhead. Fishery impacts on steelhead have been estimated using a model jointly created by DFO and MOE, and reviewed by PSARC. The Skeena Independent Science Review commented on the model and expressed concern over the uncertainty in the model parameters. As recommended, DFO will work with MOE to develop a method to estimate steelhead impacts in the Skeena sockeye fisheries. A catch monitoring framework will be presented to PSARC for review in December 2010.
Observations from 1st Surveillance	DFO has committed to using the existing data and will prepare a summary of the bycatch in the Fishery Operations System (FOS). Fishery impacts on steelhead are estimated using a model jointly created by DFO and MOE, and initially reviewed by PSARC. There have been changes to the model that merit a fresh evaluation. DFO will use sales slip data from the net fisheries to generate the final volumes for catch and will use the FOS data to generate fishing

	locations. DFO has requested to the Skeena Watershed Initiative (SWI) that the SWI technical committee support an independent technical review to evaluate the utility of the Skeena model to estimate Steelhead harvest impacts and catch. DFO has reiterated their interest to work with the Province of British Columbia to resolve steelhead issues.
Conclusion from 1st Surveillance Report	**DFO has provided concrete examples of how they intend to use existing information to generate defensible estimates of bycatch. This condition will be evaluated at the next surveillance audit.** **The CB discussed and agreed with the client that the action plan provided in the Public Certification Report (PCR) is no longer representative of the current fishery management and status, specifically, the current fishery management measures and reduced fishing effort over the last three years. The CB agrees that the client will propose a revised action plan which will be approved by the assessment team prior to next surveillance audit with the intention of evaluating the current condition against a revised action plan.**
Client Progress 2nd Surveillance	Please see information shown for Condition 13a.
Observations from 2nd Surveillance	Several methods were used to estimate bycatch during several years, including 2010 and 2011. A key issue raised by the Assessment Team was whether the logbook data, which was used for the 2007-2011 bycatch analysis, was biased given that fishermen might under report non-retained species such as steelhead or chum. There was evidence that the steelhead/sockeye ratio observed in the 2011 Ecotrust report was twice that reported in the logbooks. This difference could be due to a variety of reasons. Therefore, the Assessment Team asked DFO to examine the 2010 and 2011 logbook and observer data in more detail and determine whether there was bias in the logbook data, and if so apply a correction factor to the logbook-based values given that these values are available each year. DFO responded to the AT request and produced a memo that analysed the logbook sockeye/steelehead ratios against those based on observer data, 2006 and 2011 (Hall and Peacock 2012). Although there was variability in the ratios and the area sampled by the two methods was not identical, the DFO analysis suggested that logbooks may under-report steelhead by 50%. Therefore, DFO suggested doubling the logbook-based estimates of steelhead bycatch as a means to estimate total bycatch of steelhead. DFO also estimated the total escapement of steelhead to the Skeena watershed based on the Moricetown escapement estimates (SKR Consultants 2011), genetic analysis of steelhead in the lower river test fishery, and assumptions of 50% of 100% release mortality. During 2007-2010, estimated bycatch mortality was 2.3% or less, except in 2008 when approximately 13.5% of the run may have been removed, assuming a worst-case scenario of 100% release mortality (see table below). **Steelhead Escapement Estimates for the Skeena Watershed (Hall and Peacock 2012)**

Steelhead Escapement Estimates Skeena Watershed

Year	Steelhead M/R Estimate Bulkley Morice * (assumed 20% tag loss)	Bulkley Morice Prop Test Fishery DNA (from DNA lab)	Skeena Watershed Steelhead Escapement	Bycatch Estimates Logbook Gillnet	Bycatch Estimates Gillnet Assume 50% under reporting	Bycatch Estimates Logbook Seine	Total Estimated Steelhead Releases	Estimated Harvest Rate (assuming 100% release mort)	Estimated Harvest Rate (assuming 50% release mort)
1998		16.9							
1999									
2000		26.0							
2001	12,758	30.3	42106						
2002	20,318								
2003	9,720	18.7	51979						
2004	12,536	21.5	58307						
2005	12,273	27.8	44147						
2006	12,110	25.4	47677						
2007	15,258	20.4	74794	689	1378	374	1752	2.3%	1.1%
2008	21,987	33.2	66226	3709	7418	2908	10326	13.5%	6.7%
2009	19,237	25.2	76337	64	128	642	770	1.0%	0.5%
2010	32,912	36.5	90170	470	940	0	940	1.0%	0.5%
2011		16.0		1622	3244	1263	4507		

* Saimoto, R.S. and R.K. Saimoto. 2011. Summary report of Bulkley/Morice River steelhead data collected by the Wet'suwet'en Fisheries during the 2010 Moricetown Tagging Project. Prepared by SKR Consultants Ltd., Final Report submitted to B.C. Ministry of Environment, The Skeena Watershed Initiative, and The Pacific Salmon Foundation.

Conclusion from 2nd Surveillance Report	**The management agency has developed a reasonable approach to estimate bycatch of steelhead in the Skeena sockeye fishery. The estimated harvest rate of steelhead was relatively low during 2007-2010. Given the high profile of Skeena steelhead, the AT encourages the management agencies to continue monitoring of steelhead bycatch in the Skeena fishery. This information satisfies the condition and the fishery meets the SG80 guideposts. The condition is closed.**

Condition 21b	Certification will be conditional until Limit Reference Points or their equivalent have been defined for Skeena sockeye salmon stocks, and recovery plans have been developed and implemented for stocks harvested in Skeena sockeye fisheries that are below their LRP. The proposed recovery plans must provide information regarding the probability of recovery and the timing for recovery. To be completed within one year. **(Skeena Condition 2.1b)**
Assessed Activity	This Condition relates to Indicator 2.3.1. PI: Management strategies include provision for restrictions to the fishery to enable recovery of non-target stocks to levels above established LRPs (Limit Reference Points). 100 Scoring Guidepost • The management plans and escapement goals have been shown to have a high (>80%) probability of achieving a long-term recovery of depleted non-target stocks using risk analysis. • Historic data have been thoroughly examined to ensure fisheries restoration objectives are based on the likely habitat capacity, rather than on trends that cover only the most recent decades, thus avoiding the "moving baseline" syndrome. • Monitoring and assessment programs are established to determine with a high degree of confidence and in a timely manner that recovery is occurring. • Proposed management strategies have been reviewed and found to be scientifically defensible and appropriate by the Pacific Scientific Advice Review Committee or the appropriate Pacific Salmon Commission technical committee. • The management system supports the collection of data on non-fishing related human activity in the development of recovery plans for non-target stocks. 80 Scoring Guidepost • The management system includes assessment of plans for the recovery of non-target stocks to levels above established LRPs.

	• Objectives for recovery have at least some consideration of historic documents on stock abundance. • The management system has a reasonable (>60%) probability of achieving long-term recovery of depleted non-target stocks. • Monitoring and assessment programs are established to determine with a high degree of confidence and in a timely manner that recovery is occurring. • Escapement goals will be revised periodically to accommodate new data indicating success or failure of existing recovery plans. • The management system considers the impact of non-fishing related human activity in the development of recovery plans for non-target stocks 60 Scoring Guidepost • The management system attempts to prevent extirpation of non-target stocks and does have rebuilding strategies for the majority of the stocks. • The management system has at least a 50% probability of achieving long-term recovery of depleted non-target stocks. • The management system has a strategy for periodic revisiting escapement goals to respond to new data on recovery success or failure for the majority of the stocks. **SCORE 74** The management agencies detail submission for Skeena sockeye (DFO Skeena 2004b, p.16-21) suggested that a score of 95 was deserved with no score for guideposts 1 and that guidepost4 was not relevant. The independent review (Bocking 2005) indicated that he did not agree with DFO's assessment and suggested partial failure at all three of the criteria at the 60 level. Further, at the 80 scoring level, this reviewer saw little evidence of incorporating non-fishing human impacts in the development of recovery plans with recovery plans for Skeena sockeye being primarily driven by stock assessment and fishery management actions, not habitat actions and there are no comprehensive recovery plans. DFO contends that recovery plans are only the subject of COSEWIC listed stocks, and not the subject of depleted stocks. DFO also acknowledged that there are no LRP's for these stocks. We agreed with much of what Bocking offered, however, the Team found that DFO has a rebuilding strategy for the majority of the stocks and found that based on historical track records, more likely than not, that the stocks that are depleted would recover in the long-term and DFO responds to new data in adjustment of harvest rates and escapement goals. We generally agreed with Bocking's findings at the 80 scoring level in that there are no LRP's or comprehensive recovery programs for depleted stocks and agreed that depleted stocks (those below an LRP) were covered under this MSC criteria without being listed by COSEWIC. The Skeena sockeye salmon fishery falls short in the area of development of recovery plans for the Damshiquit, Kitwanga, Spawning and Sicintine systems. Given the relatively long term period of low returns to the depressed systems, there is reasonable doubt that these stocks will have at least a 60% probability of recovery. Guideposts 1, 3, 4 and 5 are all deficient for some of the identified depleted stocks. Although these stocks do not appear to be immediately threatened with extirpation, a recovery strategy associated with a risk analysis is needed. In addition, we received information suggesting chum salmon stocks are depleted in this area and are a significant bycatch of the sockeye salmon fishery. A recovery plan for these non-target stocks and associated risk analysis of any modified harvest strategy should be completed. The Team found that all of the 60 scoring guideposts were met because DFO has taken measures to prevent the extirpation of non-target stocks. While it is difficult to distinguish between a 50% probability of achieving long-term recovery at the 60 scoring level and a 60% at the 80 scoring level, the Team found that the management system has taken actions to reduced the impact of fisheries on the depleted non-target sockeye and chum stock in recent years. Based on the deficiencies at the 80 scoring level, the Team's score for this indicator was 74.
DFO Action Plan	**Condition 21b** - As an interim measure for the 2009 fishing season DFO adopted a precautionary management objective of reducing the Canadian commercial exploitation rate on

	Skeena sockeye to begin rebuilding individual stocks of concern by maintaining on average, A Canadian commercial exploitation rate in the range of 20 to 30%. This represents a reduction of 30 to 50% from recent decade averages. This range was consistent with the advice provided in the Skeena ISRP (Independent Science Review Panel). DFO also supports Recommendation # 1 of the ISRP, "There is a need to confront the major trade-off decisions that are implied by the Wild Salmon policy and the impacts of mixed-stock ocean fisheries on Skeena stocks. There should be an explicit public decision about the loss of biodiversity (number of weak stocks allowed to remain overfished or at risk of extinction) that is deemed acceptable and changes required to fisheries in order to achieve particular harvest objectives." Resolving this issue will be the central focus of the Skeena Watershed Process over the next few years.
Observations from 1st Surveillance	DFO provided initial LRP estimates for each sockeye lake system in the Skeena in a PSARC paper in 2004 (Cox-Rogers et al 2004 attached, Appendix Table 7). The LRP total for the non-Babine systems was 46,125. This paper also estimated the exploitation rates required to provide MSY escapement levels for each non-Babine system. These MSY exploitation rates averaged 41% with the lowest 34%. The ISRP also provided similar advice on page 7 of their report: > If the WSP... is interpreted as meaning that overharvesting will not be permitted for any Skeena salmon CU, then DFO needs to make two structural changes in the harvesting system for Skeena salmon… First, to avoid overharvesting of non-Babine sockeye stocks, ocean harvests must be reduced by roughly 50%, and the total Canadian plus Alaskan exploitation rates outside Tyee held at or below 30-40%. The ISRP scientists defined overfishing as any level below MSY. The ISRP report also provides information regarding the probability of recovery and the timing for recovery for 10 Skeena wild sockeye stocks (Figure 8 Page 37). DFO in cooperation with First Nations and other interested parties produced recovery planning documents for Kitwanga (Kitwanga Sockeye Salmon Recovery Plan, May, 2006) and Lakelse sockeye (Lakelse Lake Sockeye Recovery Plan, April 2005). The ISRP report and the sockeye status relative to the PSARC report resulted in DFO introducing a very conservative recovery plan prior to the 2009 season as a precautionary measure. The plan is centered on an abundance based exploitation rate schedule, projected to provide an average total exploitation rate in the order of 40%. This was a very precautionary approach as it was based on advice that would rebuild stocks to MSY levels, not just above the LRP levels. This aggressive approach was taken to provide a high probability for an increase in weak stock abundance in the short term. The mid and long term objectives for Skeena sockeye stocks need to be set through trade-off consultations that are part of WSP strategy 4.

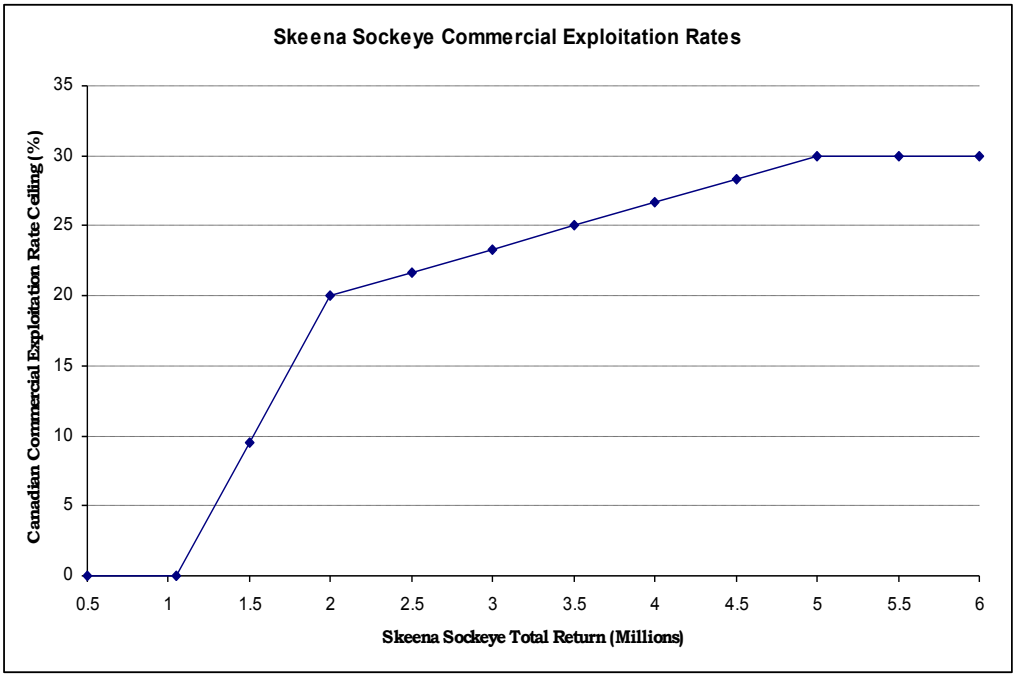


Figure 15: Skeena Sockeye Commercial Exploitation Rate Harvest Decision Guideline

The PSARC papers on Skeena stock status and the SWI "benchmark" project for all Skeena stocks are to be presented in December 2011. These will inform the next stages of refining the LRP's and recovery plans.

Conclusion from 1st Surveillance Report	**DFO has indicated that publications related to Skeena stock status and benchmarks for Skeena stocks is scheduled for release later in 2011.** **The assessment team recognizes that management changes have been made to provide protection for Skeena stocks. Appendix 9 of the 2011 IFMP for Northern Salmon defines the Commercial Fishing Plan for Northern BC salmon including the Skeena.** **DFO has defined interim LRPs for most Skeena sockeye stocks and implemented an exploitation rate ceiling to ensure that the total exploitation rate for Skeena sockeye is less than 40%. This approach is consistent with Independent Science Review Panel (ISRP) recommendations and represents a key component of the recovery plan for Skeena sockeye that are at or below their interim LRPs. These steps show good progress towards the fulfilment of this condition but given this relatively recent implementation of this plan, the assessment team proposes to defer the full evaluation of this condition until the second surveillance audit.**
Client Progress 2nd Surveillance	DFO provided a PowerPoint presentation entitled: "Precautionary Approach (PA) Framework Rebuilding Plan Guidelines" which clearly indicates that rebuilding plans are required for all stocks that are below their LRP (Critical Zone). This document provides guidance on the timeframe for the stock growing out of the Critical Zone (e.g., 1.5-2 generations but possibly longer for long-lived species). Since salmon are not a long-lived species, the AT assumes that the 1.5-2 generation time period would apply to all salmon stocks that are in the Critical Zone. No evidence has been provided that these guidelines have been implemented for any non-target salmon CU and there are clearly some CUs that are likely below their LRP (e.g. Area 3 and 4 chum and several ISC Chum CUs). Methods were developed for estimating stock specific sockeye total escapement, Canadian and Alaskan exploitation rates, and total stock abundance (English et al. 2011 aka report A). Using these data, the Pacific Salmon Foundation sponsored an analysis and two workshops (Korman and Cox-Rogers 2012; also see C, D, E, F, G, H, I, K, L, N) to evaluate the application of benchmark concepts proposed through CSAS (Holt 2009, Holt et al. 2009, Grant et al. 2011 aka reports O, P, Q). Korman and Cox-Rogers (2012) presented preliminary sockeye LRPs

	and MSY exploitation rates. Additionally, Cox-Rogers (2012) applied the CSAS benchmark concepts to habitat (lake) capacity evaluation studies (Cox-Rogers 2012; aka reports J, M). There has not been sufficient evaluation and discussion for formal definition and approval of the LRPs. This evaluation will involve First Nations, other stakeholders, and scientists at a third workshop. The recovery plan for sockeye involves the sockeye abundance based management plan implemented in 2009 to reduce impacts on all wild sockeye salmon (Fig. 15 above). The fishing plan identifies some measures to protect Morice, Kitwanga, and late Babine wild stocks of concern. The preliminary analysis by Korman and Cox-Rogers (2012 aka report N) suggest that Skeena sockeye have not been overexploited, rather some CU escapements during the recent decade have been low because survival at sea has been low. Nevertheless, any harvest of stocks in the red zone (depleted) reduces the rate at which they can potentially recover.
Observations from 2nd Surveillance	Rebuilding plans are needed for Area 3 and 4 chum stocks/CUs that are likely below LRPs. Preliminary LRP and TRP values have been developed for Skeena sockeye CUs. However, additional review and consultation is needed before LRP and TRPs can be formally accepted. Additionally, it is important to describe in-season harvest control rules for achieving TRP and LRPs for each or most CUs. An approach to rebuild the depleted stocks has been incorporated into the harvest management plan and harvest rates have been reduced, including sockeye stocks of concern. Probability and time of recovery have not been estimated, but the preliminary analysis by Korman and Cox-Rogers (2012, report N) indicates any harvest of stocks currently in the red zone will delay recovery.
Conclusion from 2nd Surveillance Report	Based on the information presented to date, the team's conclusion is that the requirements of Condition 21b have not been met. The AT concluded that this condition is behind target as it was not met on the agreed schedule. As such, the AT have specified an additional milestone and deliverable timeframe in keeping with the requirements defined by the MSC Certification Requirements, version 1.2, Section 27.22, subnote 116: *Those fisheries who signed a certification contract prior to 7 February 2011 may apply the following in place of 27.22.8.1 b i:* *If progress against an interim milestone is judged to be behind target, the CAB shall specify the remedial action required, and if relevant, further milestones and scores to be achieved, and the time frame by which the milestone shall be achieved.* Progress has been made. However, this condition will remain open until TRPs and LRPs for Skeena sockeye have been formally adopted and harvest control rules have been developed to achieve the TRPs. The client must provide evidence that this condition has been met by the 3rd surveillance audit.

Condition 22	Continued certification of the Skeena sockeye salmon fishery is contingent upon developing and implementing a recovery plan for chum stocks harvested in Skeena sockeye fisheries that are below their LRP. The proposed recovery plan must include procedures for determining the impact of the existing fishery management system on these stocks and provide for decreasing incidental harvest rates on chum salmon, if harvest pressure is found to have significant risks to chum recovery. To be completed within two years. (**Skeena Condition 2.2)**
Assessed Activity	This Condition relates to Indicator 2.3.1. PI: Management strategies include provision for restrictions to the fishery to enable recovery of non-target stocks to levels above established LRPs (Limit Reference Points). 100 Scoring Guidepost • The management plans and escapement goals have been shown to have a high (>80%) probability of achieving a long-term recovery of depleted non-target stocks using risk analysis. • Historic data have been thoroughly examined to ensure fisheries restoration objectives are based on the likely habitat capacity, rather than on trends that cover only the most recent decades, thus avoiding the "moving baseline" syndrome.

	• Monitoring and assessment programs are established to determine with a high degree of confidence and in a timely manner that recovery is occurring. • Proposed management strategies have been reviewed and found to be scientifically defensible and appropriate by the Pacific Scientific Advice Review Committee or the appropriate Pacific Salmon Commission technical committee. • The management system supports the collection of data on non-fishing related human activity in the development of recovery plans for non-target stocks. 80 Scoring Guidepost • The management system includes assessment of plans for the recovery of non-target stocks to levels above established LRPs. • Objectives for recovery have at least some consideration of historic documents on stock abundance. • The management system has a reasonable (>60%) probability of achieving long-term recovery of depleted non-target stocks. • Monitoring and assessment programs are established to determine with a high degree of confidence and in a timely manner that recovery is occurring. • Escapement goals will be revised periodically to accommodate new data indicating success or failure of existing recovery plans. • The management system considers the impact of non-fishing related human activity in the development of recovery plans for non-target stocks 60 Scoring Guidepost • The management system attempts to prevent extirpation of non-target stocks and does have rebuilding strategies for the majority of the stocks. • The management system has at least a 50% probability of achieving long-term recovery of depleted non-target stocks. • The management system has a strategy for periodic revisiting escapement goals to respond to new data on recovery success or failure for the majority of the stocks. **SCORE 74** The management agencies detail submission for Skeena sockeye (DFO Skeena 2004b, p.16-21) suggested that a score of 95 was deserved with no score for guideposts 1 and that guidepost4 was not relevant. The independent review (Bocking 2005) indicated that he did not agree with DFO's assessment and suggested partial failure at all three of the criteria at the 60 level. Further, at the 80 scoring level, this reviewer saw little evidence of incorporating non-fishing human impacts in the development of recovery plans with recovery plans for Skeena sockeye being primarily driven by stock assessment and fishery management actions, not habitat actions and there are no comprehensive recovery plans. DFO contends that recovery plans are only the subject of COSEWIC listed stocks, and not the subject of depleted stocks. DFO also acknowledged that there are no LRP's for these stocks. We agreed with much of what Bocking offered, however, the Team found that DFO has a rebuilding strategy for the majority of the stocks and found that based on historical track records, more likely than not, that the stocks that are depleted would recover in the long-term and DFO responds to new data in adjustment of harvest rates and escapement goals. We generally agreed with Bocking's findings at the 80 scoring level in that there are no LRP's or comprehensive recovery programs for depleted stocks and agreed that depleted stocks (those below an LRP) were covered under this MSC criteria without being listed by COSEWIC. The Skeena sockeye salmon fishery falls short in the area of development of recovery plans for the Damshiquit, Kitwanga, Spawning and Sicintine systems. Given the relatively long-term period of low returns to the depressed systems, there is reasonable doubt that these stocks will have at least a 60% probability of recovery. Guideposts 1, 3, 4 and 5 are all deficient for some of the identified depleted stocks. Although these stocks do not appear to be immediately threatened with extirpation, a recovery strategy associated with a risk analysis is needed. In addition, we received information suggesting chum salmon stocks are depleted in this area and are a significant bycatch of the sockeye salmon fishery. A recovery plan for these non-target stocks and associated risk analysis of any modified harvest strategy should be completed.

	The Team found that all of the 60 scoring guideposts were met because DFO has taken measures to prevent the extirpation of non-target stocks. While it is difficult to distinguish between a 50% probability of achieving long-term recovery at the 60 scoring level and a 60% at the 80 scoring level, the Team found that the management system has taken actions to reduced the impact of fisheries on the depleted non-target sockeye and chum stock in recent years. Based on the deficiencies at the 80 scoring level, the Team's score for this indicator was 74.
DFO Action Plan	**Condition 22 -** DFO will develop a chum rebuilding plan for Area 4 chum included chum spawning in the Skeena River and its tributaries. Management measures to reduce the impacts of the Skeena sockeye fishery on chum has been ongoing, and significant changes have been made to the Skeena gillnet and seine fisheries. Time and area closures and selective fishing measures are used to reduce chum impacts. DFO supports the SISRP report recommendation 6: *"Chum salmon stocks appear to be severely depressed and should be protected by avoiding late season ocean fishery openings and targeted fisheries of any kind."* Retention of chum salmon was not permitted by seines or gillnets in Skeena commercial fisheries in 2009. DFO will continue to revise the IFMP to take a more precautionary approach to chum concerns in the Skeena sockeye fishery. Monitoring and compliance of these release fisheries will remain an important component of the rebuilding plan for chum. LRPs will be developed for Skeena chum populations and provided for PSARC review by December, 2011.
Observations from 1st Surveillance	The assessment team was provided with a draft stock status working paper for Skeena chum, inclusive of the three Skeena chum conservation units, Middle Skeena, Lower Skeena and Skeena Estuary. These CU's include all of DFO Statistical Area 4, as well as small adjacent portions of Area 3 and Area 5. There are a total of 79 streams in these three CU's with one or more records of spawning chum salmon. The working paper categorically concludes: "In spite of the uncertainty, the overall pattern of Skeena chum spawner abundance is not subtle in nature. There is evidence that some chum spawning groups are gone and others exist in very low abundance. There was a general period of decline of Skeena chum from 1930's through 1960 particularly in the Skeena estuary CU. However, overall abundance has not shown a trend over the last four decades. Perhaps only the more productive elements of the historical Skeena Chum population remains and some of the Skeena chum biodiversity may have been lost, but the existing abundance coupled with the distribution of spawners throughout the "known" historic geographic range of Skeena chum means we still have a strong base from which to work. The historic harvest rates are not very instructive for stock status without a benchmark for comparison. Without knowledge of the Skeena chum productivity we cannot forecast stock responses to different harvest rates. Skeena chum harvest rates have been reduced over the last two decades but there is no evidence of increased escapements. The paucity of the escapement records of the last decade limits our capacity to evaluate the results of these changes in terms of harvest impact. We speculate that Skeena chum abundance has been strongly affected by declines in marine survival in recent years. We cannot calculate this directly for Skeena chum but the dataset for Cumshewa chum (includes Pallant enhancement) illustrates the point (Figure 26). This is a table of brood year production so it includes returns up to 2009. This general pattern decline in marine survival from the mid 1990's is broadly reflected

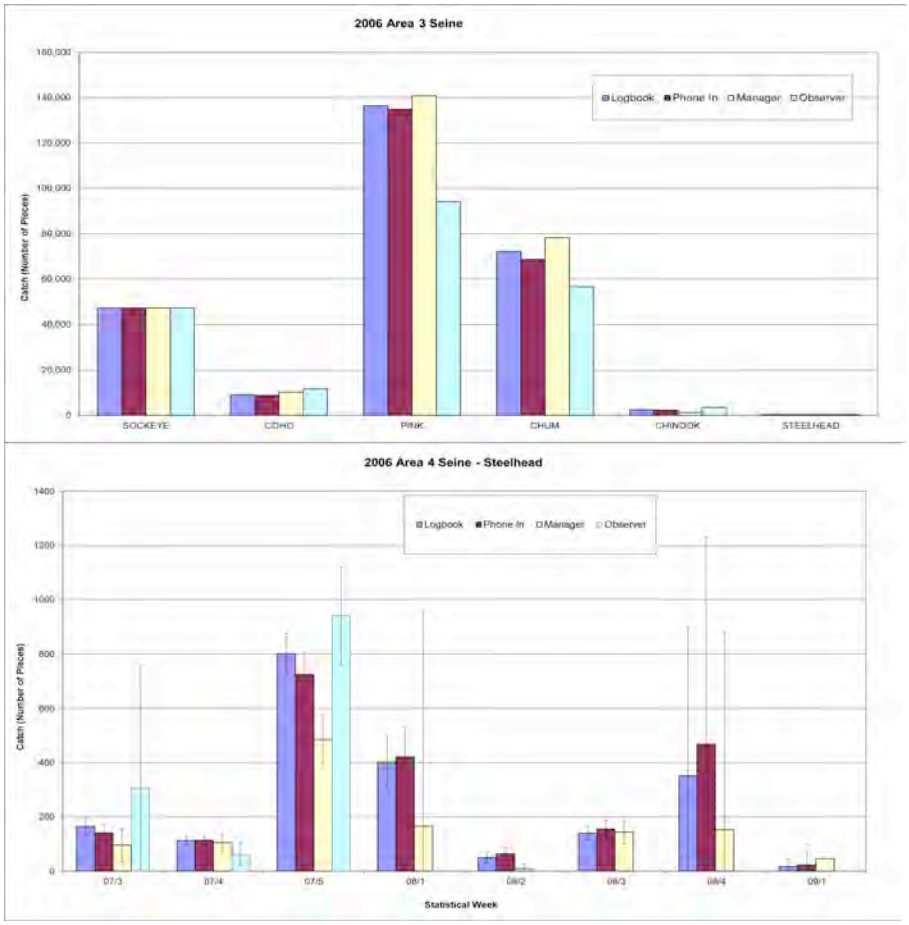
	among North Coast chum and sockeye stocks. If this is also occurring for Skeena chum (we believe it is) the benefits of the harvest rate reduction are being countered by the inverse relationship in marine survivals." The 2010 IFMP provided general constraints on commercial fishing activities for Area 4 chum as follows: • Fishing is limited to daylight hours to reduce the by-catch of coho, except during directed chinook gill net fisheries when mesh size and run timing are used to target chinook only. • Non-retention of steelhead is mandatory in all fisheries. • Brailing and sorting, with the mandatory release of chinook, chum and coho will be in place for the seine fishery. • Gill nets have a 137 mm maximum mesh restriction during the sockeye fishery. This restriction is in place so that sockeye is targeted selectively and larger non-target species such as chum and chinook are impacted to a lesser degree. • Gill net fishers are required to release all live chum, coho, and steelhead to the water with the least possible harm. The release of coho will be reviewed in-season to determine if retention is possible. • In-season assessments may change the management measures taken for various stocks. Decision guidelines specific to chum state: Chum stocks are expected to return below desired levels in most north coast waters (Areas 3 to 6). Conservation actions such as mandatory release of chum by seine and gill net (in Areas 3-12, 4 & 5) and mesh restrictions of maximum 137mm by gill net are expected to be implemented. Additional measures may be required to meet rebuilding initiatives.
Conclusion from 1st Surveillance Report	**The assessment team was informed that development of recovery plans are underway for Area 4 chum and are expected to be delivered at the next surveillance audit. Based on the baseline stock status work already prepared and the current restrictions in both the 2010 and 2011 fisheries, the assessment team considers that the action plan deliverable is on target for evaluation in 2012.**
Client Progress 2nd Surveillance	DFO provided a PowerPoint presentation entitled: "Precautionary Approach (PA) Framework Rebuilding Plan Guidelines" which clearly indicates that rebuilding plans are required for all stocks that are below their LRP (Critical Zone). This document provides guidance on the timeframe for the stock growing out of the Critical Zone (e.g., 1.5-2 generations but possibly longer for long-lived species). Since salmon are not a long-lived species, the AT assumes that the 1.5-2 generation time period would apply to all salmon stocks that are in the Critical Zone. No evidence has been provided that these guidelines have been implemented for any non-target salmon CU and there are clearly some CUs that are likely below their LRP (e.g. Area 3 and 4 chum and several ISC Chum CUs). DFO has not defined chum LRPs, or determined whether chum stocks are below an LRP, but DFO has been treating chum as stocks of concern and intends to continue with management efforts that should enable rebuilding of chum stocks (Peacock PPT). The key component of the rebuilding effort is the 10% ceiling on Skeena chum harvest rates in the Canadian commercial fishery as described in the 2012 fishing plan (HR = 8% in 2011). The "short net short set" selective fishing measure (chum non-retention) is in place in Area 4 beginning August 1 of each year. A chum spawning escapement plan is ongoing for specific index streams. Methods for estimating chum total escapement, Canadian and Alaskan harvest rates and total stock abundance were developed (English et al. 2011). This method, data, and a new assessment model are the tools used to estimate the impact of the fishery management system on Skeena chum salmon. Recent management actions have decreased incidental harvest rates. The PCF workplan is being implemented, and it includes a workshop to evaluate Skeen salmon data against benchmark standards for all species, including chum. A First Nations/DFO

	workshop has been proposed to discuss technical aspects of establishing benchmarks for all species. This effort will involve additional review and evaluations.
Observations from 2nd Surveillance	Formal rebuilding plans, LRPs, and escapement goals for chum have not been developed and implemented. DFO is treating chum as a stock of concern and has taken action to reduce Canadian harvest rates to 10% or less. The assessment and methodology report by English et al. (2011), Canadian harvest rate ceiling of 10%, and evaluation of chum harvest rates provide a means for evaluating impacts of fishing on chum salmon and whether or not chum status is improving. The management systems appears to have a reasonable probability of recovering chum (>60%) if natural mortality is reduced.
Conclusion from 2nd Surveillance Report	Based on the information presented to date, the team's conclusion is that the requirements of Condition 22 have not been met. The AT concluded that this condition is behind target as it was not met on the agreed schedule. As such, the AT have specified an additional milestone and deliverable timeframe in keeping with the requirements defined by the MSC Certification Requirements, version 1.2, Section 27.22, subnote 116: *Those fisheries who signed a certification contract prior to 7 February 2011 may apply the following in place of 27.22.8.1 b i:* *If progress against an interim milestone is judged to be behind target, the CAB shall specify the remedial action required, and if relevant, further milestones and scores to be achieved, and the time frame by which the milestone shall be achieved.* Although progress has been made, the management agency should define chum LRPs and TRPs in a recovery plan so that specific metrics are available for setting harvest rates when natural mortality of chum salmon is reduced and stock abundance begins to increase. This information should be provided by the 3rd surveillance audit.

3.9 Skeena Conditions – Principle 3

Condition 35a	Same as new condition 13a. Certification is conditional until the management agencies implement a scientifically defensible program for estimating steelhead catch in the Skeena sockeye fisheries, within two years (**Skeena Condition #3.1a**).
Assessed Activity	This Condition relates to Indicator 3.1.1 PI: The management system has a clear and defensible set of objectives for the harvest and escapement for target species and accounts for the non-target species captured in association with, or as a consequence of, fishing for target species. 100 Scoring Guidepost • Management objectives are clearly defined for all of the target stocks and are consistent with the MSC criteria for a well-managed fishery. • Harvest rates and escapement goals are precisely set for each target stock unit in the fishery, as qualified by relevant environmental factors. • Target Reference Points and Limit Reference Points are clearly defined and documented for each target stock unit in the fishery. • Harvest controls are effective with respect to the attainment of management objectives for each target stock unit in the fishery. • The management system provides estimates for all catches, landings and bycatch. 80 Scoring Guidepost • Management objectives are clearly defined for most of the target stocks and are consistent with the MSC criteria for a well-managed fishery. • Harvest rates and escapement goals are set for target stocks or target species in the fishery, as qualified by relevant environmental factors. • Harvest controls are precise and effective for major target stocks or target species in the fishery. • The management system provides estimates for all major catches, landings, and bycatch.

	60 Scoring Guidepost • Management objectives are clearly defined and consistent with MSC criteria for a well-managed fishery for the majority of target stocks. • Harvest controls are effective for the majority of the fisheries on target stocks. • The management system provides for the estimation of catch, landing, and bycatch for the majority of the fisheries. **SCORE 78** The management agency's detailed submission for Skeena sockeye (DFO Skeena 2003c, p.4) suggested that a score of 98 was appropriate for this indicator. Bocking (2005) suggested that the two of the SG80 were not met because environment factors have not been considered when setting harvest rates and escapement goals for the target stocks and harvest controls are not precise. The Team found that the information provided by DFO was sufficient to pass the first three guideposts at the SG80 but not the fourth guidepost. After a detail review of all the methods used to estimate catch or exploitation rates for Skeena steelhead stocks, the Skeena ISRP concluded that "The state of affairs today is that we actually have no idea how reliable DFO's estimates of steelhead exploitation rates are." Since there is general scientific agreement that the terminal Skeena sockeye fisheries represent a known area of high bycatch for steelhead, there is an urgent need to improve the procedures used to estimate steelhead bycatch. The Team's score was 78.
DFO Action Plan	DFO will develop a program for evaluating the impacts of the Skeena sockeye fisheries on steelhead. Fishery impacts on steelhead have been estimated using a model jointly created by DFO and B.C. Ministry of Environment (MOE), and reviewed by PSARC. The Skeena Independent Science Review commented on the model and expressed concern over the uncertainty in the model parameters. As recommended, DFO will work with MOE to review the utility of the model to estimate commercial harvest impacts. A program to estimate steelhead escapement for the watershed and for major steelhead stocks was initiated by MOE in 2008, in cooperation with DFO. Part of this study is to evaluate components of this estimation procedure to inform a steelhead escapement program planned for 2009. MOE is expected to take the lead in an evaluation of Steelhead stock status, with DFO providing support as required. The MOE initiated pilot studies in 2008 to address Skeena steelhead stock status and escapement (MOE 2008). These studies included funding to: extend DFO's Skeena test fishery past its typical late August ending date; carry out steelhead bio-sampling from the post August test fishery for genetic analysis; conduct acoustic tagging to assess the suitability of acoustic telemetry to monitor the distribution of steelhead spawners within the Skeena River; and hire a full time steelhead management biologist for the Skeena Region Ministry office to assist with steelhead project management, quality control and delivery. A catch monitoring framework will be developed by December 2010.
Observations from 1st Surveillance	DFO has committed to using the existing data and will prepare a summary of the bycatch in the Fishery Operations System (FOS). Fishery impacts on steelhead are estimated using a model jointly created by DFO and MOE, and initially reviewed by PSARC. There have been changes to the model that merit a fresh evaluation. DFO will use sales slip data from the net fisheries to generate the final volumes for catch and will use the FOS data to generate fishing locations. DFO has requested to the Skeena Watershed Initiative (SWI) that the SWI technical committee support an independent technical review to evaluate the utility of the Skeena model to estimate Steelhead harvest impacts and catch. DFO has reiterated their interest to work with the Province of British Columbia to resolve steelhead issues.
Conclusion from 1st Surveillance Report	**DFO has provided concrete examples of how they intend to use existing information to generate defensible estimates of steelhead bycatch. This condition will be evaluated at the next surveillance audit.**

	The CB discussed and agreed with the client that the action plan provided in the Public Certification Report (PCR) is no longer representative of the current fishery management and status, specifically, the current fishery management measures and reduced fishing effort over the last three years. The CB agrees that the client will propose a revised action plan which will be approved by the assessment team prior to next surveillance audit with the intention of evaluating the current condition against a revised acton plan.
Client Progress 2nd Surveillance	Several documents provided estimates of bycatch in the North Coast fisheries (Hall 2012, Peacock 2012, JO Thomas 2010, Ecotrust 2011). Hall (2012) described an approach to estimate bycatch and overall total catch using logbooks, phone-ins, fishery manager estimates and observer data. The proportions of the total catch for each species retained and released by week were calculated from each data source for seine fisheries in Statistical Areas 3 and 4 in 2006. These species proportions were then multiplied by the target species landed catch from sales slips and divided by the target species proportion from each data source to estimate catch of all species including released bycatch. This method is similar to the method Labelle (1995) used to estimate steelhead bycatch in the 1994 Area 4 net fishery. The 2006 year was selected because there was observer coverage and significant fisheries that occurred that year. The confidence intervals on the proportion shows overlap for all data sources however the proportions from the observer data are the most different, reportedly due to non-random sampling (e.g., larger vessels), and DFO believes each data source provides reasonably similar estimates of bycatch. Examples of estimated catch of all salmon (Area 3) and steelhead (Area 4) in 2006 are shown in the figures below.  Estimated catch (retained and released) of salmon and steelhead from the Area 3 seine fishery in 2006 by species and data source (Hall 2012; report ZJ). Peacock (2012) estimated bycatch of each species, including steelhead for each Statistical Area (1 to 10) during 2007 to 2011. Released catch for all salmon species was estimated using the

	species composition (retained and released) reported in logbooks and scaling them to the sales slip reported catch for the target retained species by year, gear, and area. Estimated bycatch of steelhead in Areas 3 & 4 in 2011, for example, was 1,654 by seine and 2,078 by gillnet vessels. JO Thomas (2010) estimated steelhead bycatch in Areas 3 & 4 (seine and gillnet) during 1989 to 2009 based largely on observer data. Observer data were used to develop species composition in the catch, which was then applied to the reported catch of the target species (usually sockeye) to estimate bycatch on released salmonids. DFO (PPT presentation) compared their estimates with those of JO Thomas (seven pairs). Some pairs were considerably different (e.g., 819 steelhead vs 2080 steelhead in Area 4 seines, 2006) but the JO Thomas values were 22% lower, on average, reportedly because the JO Thomas data did not include the later weeks when steelhead were still present. Ecotrust (2011) reported retained and released salmonids on seine and gillnet vessels monitored by observers. A total of 139 steelhead were observed on monitored vessels, or 0.0172 steelhead per sockeye in 2011. Observers tended to be on larger vessels. Observers monitored vessels in 2010 (less effort), but a report was not provided. DFO concluded that there is some consistency in the various methods to estimate bycatch and that the estimates are reasonable given that they consider the bycatch rate on steelhead to be relatively low.
Observations from 2nd Surveillance	Several methods were used to estimate bycatch during several years, including 2010 and 2011. A key issue raised by the Assessment Team was whether the logbook data, which was used for the 2007-2011 bycatch analysis, was biased given that fishermen might under report non-retained species such as steelhead or chum. There was evidence that the steelhead/sockeye ratio observed in the 2011 Ecotrust report was twice that reported in the logbooks. This difference could be due to a variety of reasons. Therefore, the Assessment Team asked DFO to examine the 2010 and 2011 logbook and observer data in more detail and determine whether there was bias in the logbook data, and if so apply a correction factor to the logbook-based values given that these values are available each year. DFO responded to the AT request and produced a memo that analysed the logbook sockeye/steelhead ratios against those based on observer data, 2006 and 2011 (Hall and Peacock 2012). Although there was variability in the ratios and the area sampled by the two methods was not identical, the DFO analysis suggested that logbooks may under-report steelhead by 50%. Therefore, DFO suggested doubling the logbook-based estimates of steelhead bycatch as a means to estimate total bycatch of steelhead. DFO also estimated the total escapement of steelhead to the Skeena watershed based on the Moricetown escapement estimates (SKR Consultants 2011), genetic analysis of steelhead in the lower river test fishery, and assumptions of 50% of 100% release mortality. During 2007-2010, estimated bycatch mortality was 2.3% or less, except in 2008 when approximately 13.5% of the run may have been removed, assuming a worst-case scenario of 100% release mortality (see table below). **Steelhead Escapement Estimates for the Skeena Watershed (Hall and Peacock 2012)**

Steelhead Escapement Estimates Skeena Watershed

Year	Steelhead M/R Estimate Bulkley Morice * (assumed 20% tag loss)	Bulkley Morice Prop Test Fishery DNA (from DNA lab)	Skeena Watershed Steelhead Escapement	Bycatch Estimates Logbook Gillnet	Bycatch Estimates Gillnet Assume 50% under reporting	Bycatch Estimates Logbook Seine	Total Estimated Steelhead Releases	Estimated Harvest Rate (assuming 100% release mort)	Estimated Harvest Rate (assuming 50% release mort)
1998		16.9							
1999									
2000		26.0							
2001	12,758	30.3	42106						
2002	20,318								
2003	9,720	18.7	51979						
2004	12,536	21.5	58307						
2005	12,273	27.8	44147						
2006	12,110	25.4	47677						
2007	15,258	20.4	74794	689	1378	374	1752	2.3%	1.1%
2008	21,987	33.2	66226	3709	7418	2908	10326	13.5%	6.7%
2009	19,237	25.2	76337	64	128	642	770	1.0%	0.5%
2010	32,912	36.5	90170	470	940	0	940	1.0%	0.5%
2011		16.0		1622	3244	1263	4507		

* Saimoto, R.S. and R.K. Saimoto. 2011. Summary report of Bulkley/Morice River steelhead data collected by the Wet'suwet'en Fisheries during the 2010 Moricetown Tagging Project. Prepared by SKR Consultants Ltd., Final Report submitted to B.C. Ministry of Environment, The Skeena Watershed Initiative, and The Pacific Salmon Foundation.

Conclusion from 2nd Surveillance Report	**The management agency has developed a reasonable approach to estimate bycatch of steelhead in the Skeena sockeye fishery. The estimated harvest rate of steelhead was relatively low during 2007-2010. Given the high profile of Skeena steelhead, the AT encourages the management agencies to continue monitoring of steelhead bycatch in the Skeena fishery. This information satisfies the condition and the fishery meets the SG80 guideposts. The condition is closed.**

Condition 35b	Similar to new condition 13a. Certification is conditional until the management agencies implement a scientifically defensible program for estimating steelhead catch in the Skeena sockeye fisheries and escapement and stock status for Skeena steelhead stocks, to be completed within two years. (**Skeena Condition #3.1b**).
Assessed Activity	This Condition relates to Indicator 3.1.4 PI: When dealing with uncertainty, the management system provides for utilizing the best scientific information available to manage the fishery, while employing a precautionary approach. 100 Scoring Guidepost • The management system provides for the routine assessment of the level of uncertainty in the information collected for management and establishes management controls to address these uncertainties using the best available scientific information and a precautionary approach. • The management system implements research efforts to address data gaps. • For newly developing fisheries for which there is very limited data and information, the management system implements controls on the development of the fishery that are precautionary in nature. • The management system always quantitatively evaluates the effect of implementation uncertainty (the tendency for actual harvest rates or escapements to differ from those intended by the management regulations) on the effectiveness of the proposed management actions. 80 Scoring Guidepost • The management system provides for some assessment of the level of uncertainty in the information collected for management and establishes management controls which take

	into account these uncertainties, using the best available scientific information and a precautionary approach. • In situations when precautionary measures are necessary to manage the fishery, the management system calls for increasing research efforts in order to fill data and information gaps. • In most cases where there are newly developing fisheries, the management system implements controls on the development of the fishery that are precautionary in nature. • The management system considers the effect of implementation uncertainty on the effectiveness of most of the proposed management actions. 60 Scoring Guidepost • The management system for the majority of newly developing fisheries is consistent with a precautionary approach. • The management system considers the effect of implementation uncertainty on the effectiveness of the majority of the proposed management actions. **SCORE 77** The management agency's detailed submission for Skeena sockeye (DFO Skeena 2003c, p.13) suggested that a score of 100 was appropriate for this indicator. Bocking (2005) concurred with the DFO scoring for this indicator. The Team found that the level of uncertainty associated with steelhead catch, escapement and stock status should have been sufficient for the management system to recognize that precautionary measures were necessary to manage the Skeena sockeye fishery and call for increasing efforts to fill information gaps. However, it took significant pressure and funding from outside the management system to initiate just a review of the fishery and information gaps and at the time of the rescoring there had not been a clear commitment from the management agencies to implement the recommendations of the ISRP regarding improved assessments of steelhead catch, escapement and stock status. The Team's score was 77.
DFO Action Plan	DFO will develop a program for evaluating the impacts of the Skeena sockeye fisheries on steelhead. Fishery impacts on steelhead have been estimated using a model jointly created by DFO and B.C. Ministry of Environment (MOE), and reviewed by PSARC. The Skeena Independent Science Review commented on the model and expressed concern over the uncertainty in the model parameters. As recommended, DFO will work with MOE to review the utility of the model to estimate commercial harvest impacts. A program to estimate steelhead escapement for the watershed and for major steelhead stocks was initiated by MOE in 2008, in cooperation with DFO. Part of this study is to evaluate components of this estimation procedure to inform a steelhead escapement program planned for 2009. MOE is expected to take the lead in an evaluation of Steelhead stock status, with DFO providing support as required. The MOE initiated pilot studies in 2008 to address Skeena steelhead stock status and escapement (MOE 2008). These studies included funding to: extend DFO's Skeena test fishery past its typical late August ending date; carry out steelhead bio-sampling from the post August test fishery for genetic analysis; conduct acoustic tagging to assess the suitability of acoustic telemetry to monitor the distribution of steelhead spawners within the Skeena River; and hire a full time steelhead management biologist for the Skeena Region Ministry office to assist with steelhead project management, quality control and delivery. A catch monitoring framework will be developed by December 2010.
Observations from 1st Surveillance	A program to estimate steelhead escapement for the watershed and for major steelhead stocks was initiated by British Columbia Ministry of Environment (MOE) in 2008, in cooperation with DFO. MOE has completed a paper on defining Skeena steelhead CU's (Skeena Steelhead Conservation Units, Tautz *et al*, 2011). MOE has provided a report reviewing the past 11 years of mark/ recapture data from the Bulkley/Morice system (Bulkley/ Morice River Steelhead: Summary Report for Annual Returns from 1999 to 2009, Saimoto, 2010).

	DNA data from the Skeena test fisheries is being analysed and evaluated for the potential to provide watershed steelhead escapement estimates. The MOE initiated pilot studies in 2008 to address Skeena steelhead stock status and escapement (MOE 2008). These studies included funding to: extend DFO's Skeena test fishery past its typical late August ending date; carry out steelhead bio-sampling from the post August test fishery for genetic analysis; conduct acoustic tagging to assess the suitability of acoustic telemetry to monitor the distribution of steelhead spawners within the Skeena River; and hire a full time steelhead management biologist for the Skeena Region Ministry office to assist with steelhead project management, quality control
Conclusion from 1st Surveillance Report	**Condition 13a above provides the progress regarding implementation of a scientifically defensible program for estimating steelhead catch in the Skeena sockeye fisheries. This condition also requires that escapement and stock status for Skeena steelhead stocks be completed. This condition will be evaluated at the next surveillance audit.** **The CB discussed and agreed with the client that the action plan provided in the Public Certification Report (PCR) is no longer representative of the current fishery management and status, specifically, the current fishery management measures and reduced fishing effort over the last three years. The CB agrees that the client will propose a revised action plan which will be approved by the assessment team prior to next surveillance audit with the intention of evaluating the current condition against a revised action plan.**
Client Progress 2nd Surveillance	See Client Progress for 2nd surveillance audit Skeena Condition 13a text above. According to DFO, the provincial steelhead MSY escapement calculated from habitat capacity measures is approximately 25,000 (Hall and Peacock 2012). DFO estimates of total steelhead abundance exceed 25,000 fish, as shown in the table below.
Observations from 2nd Surveillance	Several methods were used to estimate bycatch during several years, including 2010 and 2011. A key issue raised by the Assessment Team was whether the logbook data, which was used for the 2007-2011 bycatch analysis, was biased given that fishermen might under report non-retained species such as steelhead or chum. There was evidence that the steelhead/sockeye ratio observed in the 2011 Ecotrust report was twice that reported in the logbooks. This difference could be due to a variety of reasons. Therefore, the Assessment Team asked DFO to examine the 2010 and 2011 logbook and observer data in more detail and determine whether there was bias in the logbook data, and if so apply a correction factor to the logbook-based values given that these values are available each year. DFO responded to the AT request and produced a memo that analysed the logbook sockeye/steelhead ratios against those based on observer data, 2006 and 2011 (Hall and Peacock 2012). Although there was variability in the ratios and the area sampled by the two methods was not identical, the DFO analysis suggested that logbooks may under-report steelhead by 50%. Therefore, DFO suggested doubling the logbook-based estimates of steelhead bycatch as a means to estimate total bycatch of steelhead. DFO also estimated the total escapement of steelhead to the Skeena watershed based on the Moricetown escapement estimates (SKR Consultants 2011), genetic analysis of steelhead in the lower river test fishery, and assumptions of 50% of 100% release mortality. During 2007-2010, estimated bycatch mortality was 2.3% or less, except in 2008 when approximately 13.5% of the run may have been removed, assuming a worst-case scenario of 100% release mortality (see table below). **Steelhead Escapement Estimates for the Skeena Watershed (Hall and Peacock 2012)**

Steelhead Escapement Estimates Skeena Watershed

Year	Steelhead M/R Estimate Bulkley Morice * (assumed 20% tag loss)	Bulkley Morice Prop Test Fishery DNA (from DNA lab)	Skeena Watershed Steelhead Escapement	Bycatch Estimates Logbook Gillnet	Bycatch Estimates Gillnet Assume 50% under reporting	Bycatch Estimates Logbook Seine	Total Estimated Steelhead Releases	Estimated Harvest Rate (assuming 100% release mort)	Estimated Harvest Rate (assuming 50% release mort)
1998		16.9							
1999									
2000		26.0							
2001	12,758	30.3	42106						
2002	20,318								
2003	9,720	18.7	51979						
2004	12,536	21.5	58307						
2005	12,273	27.8	44147						
2006	12,110	25.4	47677						
2007	15,258	20.4	74794	689	1378	374	1752	2.3%	1.1%
2008	21,987	33.2	66226	3709	7418	2908	10326	13.5%	6.7%
2009	19,237	25.2	76337	64	128	642	770	1.0%	0.5%
2010	32,912	36.5	90170	470	940	0	940	1.0%	0.5%
2011		16.0		1622	3244	1263	4507		

* Saimoto, R.S. and R.K. Saimoto. 2011. Summary report of Bulkley/Morice River steelhead data collected by the Wet'suwet'en Fisheries during the 2010 Moricetown Tagging Project. Prepared by SKR Consultants Ltd., Final Report submitted to B.C. Ministry of Environment, The Skeena Watershed Initiative, and The Pacific Salmon Foundation.

Conclusion from 2nd Surveillance Report	**The AT concludes that DFO have specifically collected and filled information gaps pertaining to steelhead catch and escapement estimates in the Skeena sockeye fishery. The team agrees that the condition is closed out and this performance indicator rescored to 80.**

Condition 35c	Certification is conditional until the management agencies and the terminal gillnet fisheries demonstrate their commitment to implement selective fishing and handling techniques that have been shown to increase the post-release survival of non-target species, within one year (**Skeena Condition #3.1c**).
Assessed Activity	This Condition relates to Indicator 3.1.7 PI: The management system provides dision makers with useful and relevant information and advice for managing the fishery 100 Scoring Guidepost • The management system provides decision makers with a range of alternatives for achieving the objectives of management, including risk assessments for each alternative. • All management decisions are based on useful and relevant information and advice that is provided through the management system. • The management system, whenever possible, provides information to decision makers within a time frame that permits management controls to be determined before they need to be taken. 80 Scoring Guidepost • The management system provides managers with a range of alternatives for management. • Management decisions consistently rely on useful and relevant information provided within the system and there is not a record of decisions going against the information provided. 60 Scoring Guidepost • The majority of management decisions rely on data, useful and relevant information, or advice provided through the management system. • Risk assessments are considered in formulating important management decisions. **SCORE 77**

	The management agency's detailed submission for Skeena sockeye (DFO Skeena 2003c, p.22) suggested that a score of 93 was appropriate for this indicator. Bocking (2005) suggested that the second guidepost at the SG60 was not met because he "could not find any documentation that risk assessments are considered in formulating management decisions". The Team found that the pre-season and in-season analysis of fishing alternative was effectively a basic risk assessment and therefore the fishery passed the SG60. However, there were clear examples of decisions in 2006 that were not consistent with the information provided. Managers new that there were selective fishing methods that could be used to reduce the impact of the sockeye fishery on steelhead but the management system chose not to require fishers to use these more selective fishing methods and the requirement for functional revival boxes on all gillnet vessels to increase the post-release survival of non-target species was not adequately enforced. The Team's score was 75.
DFO Action Plan	This challenge is expected to be a particular focus of Skeena watershed discussions. There has been extensive research over the last 15 years to evaluate selective harvest approaches. Many of these have been implemented, resulting in very significant changes to commercial fishing seasons, geographical areas fished, daylight only fisheries, changes to gillnet configurations and the length of sets. These programs will continue to be evaluated and implemented. Monitoring and compliance of the selective fishing practices is recognized as an essential component of the management of the Skeena gillnet fishery. A report will be provided to the Certifier by March, 2010 describing selective fishing measures and outcomes.
Observations from 1st Surveillance	The 2010 IFMP provided general constraints on commercial fishing activities for Area 4 chum as follows: - Fishing is limited to daylight hours to reduce the by-catch of coho, except during directed chinook gill net fisheries when mesh size and run timing are used to target chinook only. - Non-retention of steelhead is mandatory in all fisheries. - Brailing and sorting, with the mandatory release of chinook, chum and coho will be in place for the seine fishery. - Gill nets have a 137 mm maximum mesh restriction during the sockeye fishery. This restriction is in place so that sockeye is targeted selectively and larger non-target species such as chum and chinook are impacted to a lesser degree. - Gill net fishers are required to release all live chum, coho, and steelhead to the water with the least possible harm. The release of coho will be reviewed in-season to determine if retention is possible. - In-season assessments may change the management measures taken for various stocks. The draft 2011 North Coast IFMP reiterates the points above from the 2010 IFMP and also states: Chum stocks are expected to return below desired levels in most north coast waters (Areas 3to 6). DFO is looking at a major reduction in chum fishing impacts from historical averages similar to the last few years. DFO will also examine current exploitation rates and evaluation tools. Conservation actions will include mandatory release of chum by seine and gill net (in Areas 3, 4 & 5) and mesh restrictions of maximum 137mm by gill net are expected to be implemented. Additional measures may be required to meet rebuilding initiatives. Section 7.5.4 of the 2011 draft IFMP describes issues which have been identified for the Skeena fisheries and which will guide the decision making process for the 2011 season. The identified issues are: • Co-migrating with strong sockeye stocks are weaker runs of wild sockeye, as well as stocks of all the eastern Pacific salmon species. • Measures are required to reduce harvest impacts on Skeena River coho, chum, steelhead, and some sockeye stocks. • As in recent years, the first sockeye opening will be delayed to reduce impacts on

	Nanika sockeye and the first sockeye opening will not occur before July 12th. • In recognition of the requirement to protect and rebuild stocks of concern such as late run sockeye and Skeena chum, there will limitations on sockeye harvests in the last week of July and in early August. • Even if there was a late season determination that increased the sockeye harvest allowance, any potential harvest opportunities will still be restricted because of concerns regarding harvest impacts to late run stocks of concern. • These measures include non-retention of some species, gear and fishing modifications, and specific timing closures or sockeye harvest rate reductions when weak stocks are present. • Seine fishery release compliance remains a significant concern, and maintaining harvest opportunities will directly linked to successful live release of the bycatch. • The seine fisheries will in all cases be releasing chum, Chinook and steelhead.
Conclusion from 1st Surveillance Report	**Harvest opportunities for sockeye were low for the 2009 and 2010 seasons. The assessment team accepts that the management agency has demonstrated their commitment to increase selective fishing measures and handling techniques to encourage increase in post-release survival of non-target species. This condition will be evaluated at the next surveillance audit.**
Client Progress 2nd Surveillance	The DFO presentation reviewed commercial fishing restrictions since 1987 and compliance monitoring results in 2011. Selective fishery measures implemented in 2011 gillnet and seine fisheries were described (Hall 2012), including non-retention of chum and steelhead, short gillnet short sets (Area 4 beginning Aug 1), and revival box requirements. In 2011, the Skeena seine fishery implemented a ITQ approach, which was intended to reduce the speed of the fishery, thus allowing sufficient time for proper handling, sorting and live release of non-target bycatch. Ecotrust (2011) reported compliance rates in the area 4 gillnet and seine fisheries. An estimated 90% or more of the observations (excluding unknowns) were categorized as good or very good in terms of net picking method, seine brailing method, seine sorting method, released fish handling, and revival box condition. There were some observations of poor revival box condition on gillnet vessels (5 of 119 observations) and poor fish release handling on seine vessels (1 of 35 observations). DFO noted behaviour of fishermen was likely to change on those vessels having observers (i.e., greater compliance). Enforcement officers targeted known violators and responded to tips. Most non-compliant gillnet vessels (14 violations observed in August) involved prolonged soak times (29 minutes versus the required 20 min maximum). In the seine fishery, five violations were observed, involving revival box and retention of prohibited species. JO Thomas (2010) reported low retention of prohibited species (<1% of total seine catch). Approximately 192 of 207 released fish (all species) or 93% were classified as vigorous/non-bleeding. The NCCC – Post Season Review indicates increased non-conformance in 2011. This may be due to initiation of the short set/ short net fishery in August. DFO believes the majority of fishers are trying to comply with the regulations, but the industry noted that compliance is a problem when rationale for management measures was not based on conservation objectives (e.g., steelhead bycatch or abundant enhanced Alaska chum in Area 3).
Observations from 2nd Surveillance	DFO implemented a number of measures to reduce impacts on non-target salmonids including selective fishery measures that are described in the fishery management plan. There is some indication that most but not all of the industry is complying with the new measures. On-vessel observations likely underestimated non-compliance. There is a need to continue to monitor and enforce compliance with regulations. Penalties for non-compliance were not described by DFO, so the incentive for compliance is uncertain (check this). Criteria for defining good versus poor fishing operations in the Ecotrust (2011) investigation were lacking. There was some evidence of fish health (207 observations) upon release from gillnet and seine vessels, as required by the scoring guide.
Conclusion from 2nd Surveillance Report	Based on the information presented to date, the team's conclusion is that the requirements of Condition 35c have not been met. The AT concluded that this condition is behind target as it was not met on the agreed schedule. As such, the AT have specified an additional milestone

	and deliverable timeframe in keeping with the requirements defined by the MSC Certification Requirements, version 1.2, Section 27.22, subnote 116: *Those fisheries who signed a certification contract prior to 7 February 2011 may apply the following in place of 27.22.8.1 b i:* *If progress against an interim milestone is judged to be behind target, the CAB shall specify the remedial action required, and if relevant, further milestones and scores to be achieved, and the time frame by which the milestone shall be achieved.* Progress has been made. The management agency has largely complied with this condition but there are some observations of noncompliance among the industry and concerns from stakeholders about the veracity of information provided from the fleet. Therefore, the fishery will require continued monitoring and enforcement of regulations. By the third surveillance audits, the client will provide compliance statistics to demonstrate that the fishery has improved compliance in relation to the requirements of the condition.

Condition 35d	Certification will be conditional until the management agency provides a research plan that addresses identified concerns related to the impact of the fishery on the ecosystem, with emphasis on non-target stocks (e.g. Skeena summer-run steelhead), and takes into consideration socioeconomic factors and anticipated changes to fisheries. This task should be completed by May 2012 (**Skeena Condition #3.1d**).
Assessed Activity	This Condition relates to Indicator 3.2.1. PI: The research plan covers the scope of the fishery, includes all target species, accounts for the non-target species captured in association with, or as a consequence of fishing for target species, and considers the impact of fishing on the ecosystem and socioeconomic factors affected by the management program. 100 Scoring Guidepost • The management system incorporates a research component that considers relevant data and information needs for formulating management strategies for all target species, and also information leading to an understanding of the dynamics of the ecosystem including data on the catch, landings and discards of non-target species. • The framework for research includes investigations dealing with socioeconomic impacts of the fishery. • The research plan responds in a timely fashion to unexpected changes in the fishery. • Funding is secure and sufficient to meet long-term research needs. • There is significant continuing progress in understanding the impact of the fishery on target and non-target species, and the ecosystem in general. • Research results form the basis for formulating management strategies and decisions. • Research is regularly published in peer review journals and/or is reviewed by PSARC or the PSC. 80 Scoring Guidepost • The management system incorporates a research component that provides for the collection and analysis of information necessary for formulating management strategies and decisions for both target and non-target species. • The research plan addresses concerns related to the impact of the fishery on the ecosystem. • The research plan addresses socioeconomic issues that result from the implementation of management. • The research plan is responsive to changes in the fishery. • Funding is adequate to support short-term research needs. • There is progress in understanding the impact of the fishery on target and non-target species. • Research results are utilized in forming management strategies. • Research is reviewed by PSARC or PSC, or other appropriate and technically qualified entities.

	60 Scoring Guidepost • Research provides for the collection of catch statistical and biological data for the target species. • There has been useful research on the impact of fishing on target and non-target species taken in the fishery, and on the ecosystem in general. **SCORE 73** The management agency's detailed submission for Skeena sockeye (DFO Skeena 2003c, p.29-30) suggested that a score of 95 was appropriate for this indicator. Bocking (2005) suggested that the three of the SG80 were not met because the research plan does not adequately address the impact of the fishery on the ecosystem and socio-economic issues and funding levels are not adequate. The Team's agreed with Mr. Bocking's assessment and found, in addition, that the lack of any research plan for Skeena sockeye fisheries makes it impossible to assess whether the plan addresses concerns related to the impact of the fishery on the ecosystem, socioeconomic issues that result from the implementation of management plans, or if the research plan is responsive to changes in the fishery. The Core Stock Assessment Review for North and Central Coast salmon stocks and the ISRP process identify many of the key elements that should be included in a research plan for Skeena sockeye fisheries. The Team's score was 73.
DFO Action Plan	In addition to the more generic response provided above, the Skeena Watershed Process will provide a forum to help meet this condition. A socio-economic review of Skeena salmon fisheries was released in late October 2008, and is currently being reviewed as will be used to inform the Skeena Watershed Process. A "habitat" subcommittee has been formed and as a first step has initiated a mapping project to be completed by the spring of 2009, intended as a public information tool on salmon habitat, land use and ecosystem factors. DFO will develop a program for monitoring the by-catch in Skeena sockeye fisheries including steelhead. Fishery impacts on steelhead have been estimated using a model jointly created by DFO and MOE, and reviewed by PSARC. The Skeena Independent Science Review commented on the model and expressed concern over the uncertainty in the model parameters. As recommended, DFO will work with MOE to review the utility of the model to estimate steelhead catch in the Skeena sockeye fisheries. Research plans will be incorporated into a revised IFMP for the Skeena fishery by May 2012.
Observations from 1st Surveillance	DFO indicated that there are on-going discussions on how to best develop the management/ assessment framework, which will incorporate the requirements of the condition.
Conclusion from 1st Surveillance Report	**General feedback was provided in regard to this condition. DFO committed that the research plans will be provided in the second surveillance audit in 2012. This condition will be evaluated at the next surveillance audit.**
Client Progress 2nd Surveillance	Effort has been made to evaluate harvest and escapement data (English et al. 2011), develop preliminary benchmarks for sockeye salmon (Korman and Cox-Rogers 2012), evaluate life cycle productivity of non-target sockeye salmon (Cox-Rogers and Spilsted 2012, Korman 2012), lake productivity (Selbie 2012 aka report X), evaluate effects of spawning channel sockeye on wild Babine sockeye (Cox-Rogers and Spilstead 2012), evaluate bycatch of steelhead and other species (Hall 2012, Peacock 2012, JO Thomas 2010, Ecotrust 2011), and estimate steelhead escapement . Mark Saunders (DFO) provided a presentation on the Resource Assessment Framework that forms the basis for decision-making and work planning for the stock assessment program. The plan will describe data and methodologies required to assess the status of salmon populations for a wide range of objectives, and to develop plans for groups of CUs with similar characteristics. Considerations include fishing, ecosystem, and impacts to other species, e.g. killer whales. The plan will consider risk management. The stock assessment plan is expected to be produced by DFO in November 2012.
Observations	DFO and other entities have made considerable progress researching issues that are key to

from 2nd Surveillance	fishery management. DFO is largely responsive to the findings of the research, although rapid change in management is slowed by the considerable consultation process with stakeholders, which is an important aspect of fisheries management. One area of research that has been missing since the early 2000s is the Babine smolt program, which is needed to evaluate life stage productivity of wild Babine sockeye salmon. The AT assumes the stock assessment plan, which is suppose to be released by DFO in November 2012, will provide a description of research and activities to improve management while also addressing socioeconomic issues.
Conclusion from 2nd Surveillance Report	Based on the information presented to date, the team's conclusion is that the requirements of Condition 35d have not been met. The AT concluded that this condition is behind target as it was not met on the agreed schedule. As such, the AT have specified an additional milestone and deliverable timeframe in keeping with the requirements defined by the MSC Certification Requirements, version 1.2, Section 27.22, subnote 116: *Those fisheries who signed a certification contract prior to 7 February 2011 may apply the following in place of 27.22.8.1 b i:* *If progress against an interim milestone is judged to be behind target, the CAB shall specify the remedial action required, and if relevant, further milestones and scores to be achieved, and the time frame by which the milestone shall be achieved.* Progress has been made. This condition will be further evaluated during the third audit when the Core Stock Assessment Program for the NCCC UoC is available.

Condition 36a	Same as Condition 29. (**Skeena Condition #3.2a**).
Assessed Activity	This Condition relates to Indicator 3.6.3 PI: The management system provides for the observation of legal and customary rights of First Nation peoples. The DFO submissions were essentially identical for all fisheries and suggested that all guideposts were met for each fishery (DFO Fraser 2004c, p. 57-59; DFO Barkley Sound 2004c, p. 47-49; DFO Skeena 2004c, p. 54-55; DFO Nass 2004c, p. 54-55). The Team found that the Fraser, Barkley Sound and Skeena fisheries did not pass one of the guideposts at the SG80 because of concerns expressed by First Nation representatives regarding their access to sockeye for food, social and ceremonial purposes (see section on scores below 80). It was surprising that the submission for the Nass did not make any reference to the Nisga'a Treaty (a comprehensive land claims treaty which included fishing rights for salmon) which has been in effect since 11 May 2000. The Team found that the successful negotiation and implementation of the Nisga'a Treaty was sound evidence that all guideposts have been met and thus the score for this indicator was 100 for the Nass fishery. 100 Scoring Guidepost • The management system is in compliance with all major legal and customary rights of First Nation peoples that are impacted by the fishery. • The management system includes processes for consultation with First Nations peoples on the impact of the commercial fishery on their food, social and ceremonial fisheries. 80 Scoring Guidepost • The management system is found to be in compliance with all legal and most of the customary rights of First Nation peoples that are impacted by the fishery. • The management system includes processes for providing information to First Nations peoples on the major impacts of the commercial fishery on their food, social and ceremonial fisheries. 60 Scoring Guidepost • The management system is in compliance with the legal rights of First Nation peoples that are impacted by the fishery. **SCORE 75**

	The management agency's detailed submission for Skeena sockeye (DFO Skeena 2003c, p.55) suggested that a score of 100 was appropriate for this indicator. Bocking (2005) suggested that the first guidepost at the SG100 was not met. The submissions by the client indicate that DFO believes it has met its First Nations obligations to protect and manage for food, social, and ceremonial harvest by First Nations. However, in consultation with First Nations and conservations groups, the Team was provided with information suggesting that several of the First Nations that harvest Skeena River sockeye would not agree the management system is in compliance with all the legal and most of the customary rights of First Nation peoples that are impacted by the Skeena River sockeye fishery. The Team's score was 75.
DFO Action Plan	Treaty making with aboriginal peoples has a long history in Canada. The Crown began entering into treaties with aboriginal groups in the early 1700's, which continued until the 1920's. These are referred to as "historic treaties". In the 1970's, treaty-making resumed resulting in "modern treaties" which are generally more complex and detailed than "historic treaties". "Modern treaties" continue to be negotiated in various parts of Canada. In 1982, section 35 was added to the Constitution of Canada. Section 35 provides "constitutional protection" to aboriginal rights and rights under both "historic treaties" and "modern treaties". The Supreme Court of Canada has held that the "constitutional protection" of aboriginal rights and treaty rights means that any infringement of such a right must be justified. The Supreme Court of Canada has also held that aboriginal rights to fish for "food, social and ceremonial" purposes have priority, after conservation, over fishing for commercial or recreational purposes. From a Canadian perspective, it is important to distinguish between an aboriginal right to fish for food and an aboriginal right to fish for "livelihood". The proposed Performance Indicators under this category merge these two distinct concepts in the same criteria. In other words, the Government's legal duty to consult with aboriginal groups can arise even where aboriginal rights have only been asserted and not yet legally proven. Whether an aboriginal right exists and the nature, extent and scope of that right is group and fact specific. The existence of aboriginal rights is generally established through litigation involving extensive historical and anthropological evidence or through historic or modern treaties. Determining the nature, extent and scope of "historic treaty" rights can also present challenges. The wording in "historic treaties" can be difficult to interpret. For instance, the wording of the fishing right in the "Douglas Treaties" entered into in the 1850's in British Columbia provides that the aboriginal groups who were signatories have the right "to carry on our fisheries as formerly". Although section 35 of the Constitution of Canada contains a general statement that all existing aboriginal and treaty rights are "recognized and affirmed", the challenges described above can make it difficult to "recognize" what specific aboriginal rights may belong to a particular aboriginal group and or their exact nature and scope. Regardless of this difficulty, as noted above, the Government's duty to consult with an aboriginal group may arise even where aboriginal rights have only been asserted and are not yet legally proven. In order to meet this condition DFO will provide a report summarizing how the management system addresses issues regarding aboriginal and treaty rights related to the sockeye salmon fisheries. This report will be provided by December 2010.
Observations from 1st Surveillance	In response to this condition and similar conditions (29, 34, 36a), DFO submitted a document to the assessment describing their commitment to "compliance with all legal and most of the customary rights of First Nation peoples that are impacted by the fishery". DFO's objective is to manage fisheries to ensure that, after conservation needs are met, First Nations' food, social and ceremonial requirements and treaty obligations have first priority in salmon allocation. Aboriginal programs including AFS, ATP, AAROM, Treaties and PICFI provide the policy basis for meeting the objectives of providing opportunities to First Nations to meet their FSC needs. Comprehensive Fisheries Agreements and input into the North Coast and South Coast

	IFMPs are important components for meeting the objectives for aboriginal fisheries. Opportunities to become involved in the management and planning of the fishery are provided through bilateral, sub-regional and regional consultation processes. Opportunities to share technical information are provided for in the consultation processes.
Conclusion from 1st Surveillance Report	**Given the information provided by DFO regarding their commitment to "compliance with all legal and most of the customary rights of First Nation peoples that are impacted by the fishery", this condition has been met for Skeena sockeye. The score for this indicator has been raised to 80 and the condition has been closed out.**

Condition 36b	Certification will be conditional until there is a clear commitment from the management agency and fishers to identify and implement selective fishing techniques that are consistent with the goal of reducing the catch of non-target species, especially steelhead. These tasks should be completed within two years (**Skeena Condition #3.2b**).

Assessed Activity	This Condition relates to Indicator 3.7.1
	
	PI: Utilization of gear and fishing practices that minimize both the catch of non-target species, and the mortality of this catch.
	
	100 Scoring Guidepost
	• There are requirements in the management system to reduce the capture of non-target species, which include:
	  ○ Controlling the use of gear types and fishing practices that result in significant catches of non-target species or undersized individuals of target species, and/or
	  ○ Implementing closed seasons and no-fishing zones during times and in areas where the probability of making significant catches of non-target species or undersized individuals of target species is high, and
	  ○ Holding education programs for the fishing industry and other relevant stakeholders to make them aware of the benefits of using fishing techniques and gear that minimize the catch of non-target species or undersized individuals of target species.
	• Taking into consideration natural variability in population abundance and the possibility of declining abundance resulting from heavy exploitation, the management system can demonstrate the effective use of these methods by fishers by the existence of downward trends in the catches of non-target species.
	• The management system creates incentives to decrease the catch of non-target species (e.g. by providing more fishing time for vessels achieving certain standards for reducing such catches).
	
	80 Scoring Guidepost
	• Through educational programs for members of the fishing industry and other relevant stakeholders, the management system discourages the use of gear types and fishing practices that result in high catches of non-target species or undersized individuals of target species, and encourages them to avoid fishing in areas identified to have high concentrations of non-target species or undersized individuals of target species.
	• Taking into consideration natural variability in population abundance, there is evidence that the capture and discard of non-target species or undersized individuals of target species is trending downward, or is at a level of exploitation that has been determined by management to be acceptable.
	• Fishers generally conduct their fishing activity in a manner that is consistent with the goal of reducing the catch of non-target species or undersized individuals of target species.
	
	60 Scoring Guidepost
	• The majority of fisheries are conducted in a manner that is consistent with the goal of reducing the catch of non-target species or undersized individuals of target species.
	
	SCORE 73

	The management agency's detailed submission for Skeena sockeye (DFO Skeena 2003c, p.57-58) suggested that a score of 100 was appropriate for this indicator. Bocking (2005) suggested that the second guidepost at the SG80 was not met because he does not believe that "there is evidence that the capture and discard of non-target species is trending down or that the level of exploitation is acceptable, particularly for steelhead and chum". The Team agreed with Mr. Bocking and found that the uncertainties related to the capture and discard rates for non-target species in Skeena sockeye fisheries make it virtually impossible to determine trends in these rates. The continuing resistance to the use of short nets and short sets or tangle tooth nets in the Skeena sockeye gillnet fishery is strong evidence that this fishery is not conducted in a manner that is consistent with the goal of reducing the catch of non-target species. The Team's score was 73.
DFO Action Plan	There has been extensive research over the last 15 years to evaluate selective harvest approaches. Many of these have been implemented, resulting in very significant changes to commercial fishing seasons, geographical areas fished, daylight only fisheries, changes to gillnet configurations and the length of sets. These programs will continue to be evaluated and implemented. Monitoring and compliance of the selective fishing practices is recognized as an essential component of the management of the Skeena gillnet fishery. A report will be provided to the Certifier by December, 2010 describing selective fishing measures and outcomes.
Observations from 1st Surveillance	The AT heard testimony that seine fishery participants are working to establish a defined share fishery. The 2011 Skeena sockeye seine fishery will be a demonstration ITQ fishery, which is intended to reduce the speed of the fishery, thus allowing sufficient time for proper handling, sorting and live release of non-target bycatch. Discussions with the gillnet fleet have been less successful. While the management agency has mandated shorter set times and shorter nets, industry has responded that this results in higher costs and significantly more work.
Conclusion from 1st Surveillance Report	**As defined in Condition 35c above, DFO has continued to require specific selective fishing requirements for the Skeena sockeye fishery as clearly described in Appendix 9 of the Northern BC salmon IFMP. This condition seeks to confirm commitment from the fishing industry to implement selective fishing techniques that ultimately reduce catch of non-target species. This condition will be evaluated at the next surveillance audit.**
Client Progress 2nd Surveillance	The DFO presentation reviewed commercial fishing restrictions since 1987 and compliance monitoring results in 2011. Selective fishery measures implemented in 2011 gillnet and seine fisheries were described (Hall 2012), including non-retention of chum and steelhead, short gillnet short sets (area 4 beginning Aug 1), and revival box requirements. In 2011, the Skeena seine fishery implemented a ITQ approach, which was intended to reduce the speed of the fishery, thus allowing sufficient time for proper handling, sorting and live release of non-target bycatch. Ecotrust (2011) reported compliance rates in the area 4 gillnet and seine fisheries. An estimated 90% or more of the observations (excluding unknowns) were categorized as good or very good in terms of net picking method, seine brailing method, seine sorting method, released fish handling, and revival box condition. There were some observations of poor revival box condition on gillnet vessels (5 of 119 observations) and poor fish release handling on seine vessels (1 of 35 observations). DFO noted behaviour of fishermen was likely to change on those vessels having observers (i.e., greater compliance). Enforcement officers targeted known violators and responded to tips. Most non-compliant gillnet vessels (14 violations observed in August) involved prolonged soak times (29 minutes versus the required 20 min maximum). In the seine fishery, five violations were observed, involving revival box and retention of prohibited species. JO Thomas (2011) reported low retention of prohibited species (<1% of total seine catch). Approximately 192 of 207 released fish (all species) or 93% were classified as vigorous/non-bleeding.

	The NCCC – Post Season Review indicated increase in non-conformance in 2011. This may be due to initiation of the short set/ short net fishery in August. DFO believes the majority of fishers are trying to comply with the regulations, but the industry noted that compliance is a problem when rationale for management measures was not based on conservation objectives (e.g., steelhead or abundant area 3 enhanced Alaska chum). DFO estimated that fishermen logbooks may under-report catch of steelhead by 50% (Hall and Peacock 2012). DFO estimated that the harvest rate on Skeena steelhead during the sockeye fishery was typically less than 2.3% during 2007-2010 (assuming a worst-case 100% release mortality), but may have reached 13.5% in 2008.
Observations from 2nd Surveillance	DFO implemented a number of measures to reduce impacts on non-target salmonids including selective fishery measures that are described in the fishery management plan. There is some indication that most but not all of the industry is complying with the new measures. Logbook estimates of steelhead bycatch appear to be under-reported. On-vessel observations likely underestimated non-compliance. There is a need to continue to monitor and enforce compliance with regulations. Penalties for non-compliance were not indicated by DFO. Criteria for defining good versus poor fishing operations in the Ecotrust investigation were lacking. There was some evidence of fish health verification (207 observations) upon release from gillnet and seine vessels. The estimated maximum harvest rate on steelhead during 2007-2010 was relatively low (<14%), assuming 100% release mortality and a doubling of logbook bycatch estimates.
Conclusion from 2nd Surveillance Report	**Progress has been made. The management agency has largely complied with this condition and although there are some observations of noncompliance among the industry, there is evidence of low harvest rates on steelhead and use of the defined measures. The AT accepts to close this condition out, and rescore to 80. However, the fishery will require continued monitoring and enforcement of regulations and future surveillance audits will confirm improved compliance.**

Condition 36c	Certification will be conditional until there is a clear commitment from the fishers participating in Skeena sockeye fisheries to provide sufficient information for managers to derive reliable estimates of the catch and discards of steelhead and other non-target species, within two years (**Skeena Condition #3.2c**).
Assessed Activity	This Condition relates to Indicator 3.7.4 PI: The management system solicits the cooperation of the fishing industry and other relevant stakeholders in the collection of data on the catch and discard of non-target species and undersized individuals of target species. 100 Scoring Guidepost • The majority of fish harvesters and processors are in compliance with management requests for the collection of data on catches and discards of non-target species and undersized individuals of target species. • Continued improvement in the quality and quantity of catch and discard data is evident. 80 Scoring Guidepost • Sufficient numbers of fish harvesters and processors comply with requests for data on catches and discards of non-target species and undersized individuals of target species to ensure that reliable estimates of total catches and discards for the fishery can be obtained. 60 Scoring Guidepost • Catch and discard data provided by the fishing industry and other relevant stakeholders are sufficient to manage the harvests from the majority of the non-target species and undersized individuals from the majority of the target species. **SCORE 60**

	The management agency's detailed submission for Skeena sockeye (DFO Skeena 2003c, p.62-63) suggested that a score of 100 was appropriate for this indicator. Bocking (2005) suggested that the SG80 guidepost was only partially met because "there is insufficient monitoring to show continued improvement in the quality and quantity of catch and discard data, at least for steelhead and chum". The Team found that while some harvesters have complied with requests for data on catch and discards of non-target species, it is clear that the number of complying fishers is not sufficient to provide reliable estimates of total catches and discards for steelhead. The Team's score was 60 for this indicator.
DFO Action Plan	DFO will develop a program for monitoring the by-catch in Skeena sockeye fisheries including steelhead. Fishery impacts on steelhead have been estimated using a model jointly created by DFO and MOE, and reviewed by PSARC. The Skeena Independent Science Review commented on the model and expressed concern over the uncertainty in the model parameters. As recommended, DFO will work with MOE to review the utility of the model to estimate commercial harvest impacts. A catch monitoring framework will be developed by December, 2011.
Observations from 1st Surveillance	There have been meetings with gillnetters, unions and processing companies about redesigning fishing log forms in order to practically improve reporting by sub-areas. It's not achieved yet and DFO will proceed further in 2011. The objective is that logbooks are entered in 3 – 4 days after landing at the landing site by processing companies. The initial discussion was that processing companies would provide data entry for the vessels. Many trollers already have e-logs so they enter it automatically. (D. Peacock, Pers. Comm.).
Conclusion from 1st Surveillance Report	**There is progress on this condition as several groups within the industry work together to see how information can be captured in a quicker timeframe. This condition will be evaluated at the next surveillance audit.**
Client Progress 2nd Surveillance	Fishermen are required to document retained and non-retained catches of salmonids in log-books. Fishermen are also required to phone-in their retained and released catch, and to respond to charter patrol requests for catch data on the fishing grounds. Hall (2012) compared logbook, phone-in, manger, observer and sales slip (most accurate) estimates of catch during 2006. Estimates of retained species (sockeye, pink) were similar for each of the reporting methods (Fig. 2). However, there was evidence that the steelhead/sockeye ratio observed by Ecotrust (2011) was twice that reported in the logbooks. This difference could be due to a variety of reasons, including non-random observations in the Ecotrust study. At the request of the AT, DFO compared logbook estimates of bycatch with those based on the observer program (e.g., compared sockeye/steelhead ratios) (Hall and Peacock 2012). DFO reported that the logbooks appeared to under-report steelhead bycatch and recommended doubling of steelhead bycatch reported in logbooks. DFO noted that comparison of observer data and logbook data was not ideal because of differences in areas fished, etc.
Observations from 2nd Surveillance	The management system requires documentation of retained and non-retained catch by the fishing industry. While there is evidence of relatively accurate reporting of retained catch in fishermen logbooks, the release of non-target species such as steelhead appears to be under-reported by approximately 50%.
Conclusion from 2nd Surveillance Report	Based on the information presented to date, the team's conclusion is that the requirements of Condition 36c have not been met. The AT concluded that this condition is behind target as it was not met on the agreed schedule. As such, the AT have specified an additional milestone and deliverable timeframe in keeping with the requirements defined by the MSC Certification Requirements, version 1.2, Section 27.22, subnote 116: *Those fisheries who signed a certification contract prior to 7 February 2011 may apply the following in place of 27.22.8.1 b i:* *If progress against an interim milestone is judged to be behind target, the CAB shall specify the remedial action required, and if relevant, further milestones and scores to be achieved, and the time frame by which the milestone shall be achieved.* The assessment team requires evidence of a clear commitment from harvesters participating in

	the Skeena sockeye fishery to provide sufficient information to managers to derive reliable estimates of the catch and discard of steelhead and non-target species. A clear commitment requires both accurate reporting of catch and discards. The client must provide statistical evidence of logbook data versus observer/ fishery officer data by the 3rd surveillance audit.

3.10 Nass Conditions – Principle 1

Condition 15	Certification will be conditional until annual escapement estimates are computed for each of the Nass sockeye stocks targeted in the fisheries for Nass sockeye, within one year (**Nass Condition #1.1**).
Assessed Activity	This Condition relates to Indicator 1.1.2.2. PI: Estimates exist of the spawning escapement for each stock unit. 100 Scoring Guidepost • Estimates are available for the annual escapement for each stock unit harvested in the fishery. • In-season escapement data are collected for all stock units and used to regulate the fishery. 80 Scoring Guidepost • Estimates are available for the annual escapement of each target stock harvested in the fishery. • Fishery independent indicators of abundance are available for the non-target species harvested in the fishery. • In-season escapement data are collected for the target stocks and used to regulate the fishery. 60 Scoring Guidepost • Escapement estimates for target stocks are available, where escapement estimates are necessary to protect the target stock from overexploitation. • Fishery independent indicators of abundance are available for non-target stocks where the fishery harvests may represent a significant component of the harvest of that stock. **SCORE 74** The management agency's detailed submission for Nass sockeye (DFO Nass 2003a, p.14) suggested that a score of 95 was appropriate for this indicator. Levy (2005) concurred with the DFO score for this indicator. The Team found that reliable escapement estimates are computed for the aggregate sockeye return to the Nass River and the Meziadin sockeye stock. Annual estimates are not available in recent years for most of the smaller sockeye stocks (e.g. Bowser, Damdochax, Kwinageese), therefore, the first scoring guidepost at the 80 SG was not met. The escapement of these stocks could be readily estimated using DNA samples obtained from the Lower Nass fishwheels. The Team's score was 74.
DFO Action Plan	DFO will use the current core stock assessment program to develop and implement a plan for monitoring the escapement of sockeye stocks targeted in fisheries. DFO intends to continue monitoring escapements to the dominant Meziadin stock using direct counts at the fishway. For the other lake rearing stocks (Fred Wright, Damdochax, Bowser), an escapement monitoring program will be developed in cooperation with the FN interests in the watershed and may include direct visual escapement surveys, stock specific escapement estimates derived from Nisga'a fishwheel DNA analysis, scale pattern analysis from Nisga'a fishwheel biological samples, and/or hydroacoustic lake surveys to assess juvenile abundance as an indirect measure of spawning success. Stream-type sockeye stocks comprise a small component of the Nass aggregate sockeye stock and currently two systems are monitored by FNs for escapements using visual survey methods (Brown Bear and Gingit). DFO intends to continue to support these programs and as part of the overall Nass escapement monitoring plan will examine the feasibility of using fishwheel DNA analysis to develop annual estimates of the stream type sockeye stocks (these are a single CU under the WSP). A technical workshop will be convened in 2009 to develop an overall Nass escapement monitoring plan. The resulting monitoring plan will be provided to the Certifier by December 2010.
Observations	This condition was to be closed out during the first year. A Nass sockeye technical workshop

from 1st Surveillance	was conducted in the Spring of 2010. This workshop led to the analysis of all available DNA samples and development of the CSAS working paper on Nass Sockeye (Hall et al. 2010). The current approach for monitoring sockeye escapement to the Nass sockeye stocks includes obtaining weekly DNA samples through the Nisga'a fishwheel program, operating a video counting fence on the Kwinageese River, conducting visual surveys of Gingit and Brown Bear creeks and conducting hydroacoustic estimates of fry abundance in Damdochax Lake. The Nass Sockeye CSAS paper included specific recommendations regarding conservation measures for Kwinageese sockeye which were implemented in 2011. .
Conclusion from 1st Surveillance Report	**Given the information provided in the CSAS working paper on Nass Sockeye and the actions undertaken in 2010 and 2011 to improve escapement monitoring systems for Nass sockeye stocks, the requirements for this condition have been met. The score for this indicator has been raised to 80 and the condition has been closed out**

Condition 16	Certification will be conditional until LRP's have been defined for each of the Nass sockeye stocks targeted in the fisheries for Nass sockeye, within two years (**Nass Condition #1.2**).
Assessed Activity	This Condition relates to Indicator 1.1.3.1. PI: Limit Reference Points or operational equivalents have been set and are appropriate to protect the stocks harvested in the fishery. 100 Scoring Guidepost • The Limit Reference Point for target species have been reviewed and found to be scientifically defensive and appropriate by the Pacific Scientific Advice Review Committee or the appropriate Pacific Salmon Commission technical committee. • There is general agreement among regional fisheries scientist outside the management agency that the LRP's are appropriate. • There is general scientific agreement regarding the LRP's for non-target species. 80 Scoring Guidepost • There is some scientific basis for the LRP's for target stocks and these LRP's are defined to protect the stocks harvested by the fisheries. • There is no significant scientific disagreement regarding the LRP's used by the management agency to formulate management decision for the fishery. 60 Scoring Guidepost • There is general agreement among regional fisheries scientist within the management agency that the LRP's or equivalent are appropriate to achieve the management goals for target stocks. **SCORE 75** The management agency's detailed submission for Nass sockeye (DFO Nass 2003a, p.18-19) suggested that a score of 100 was appropriate for this indicator. Levy (2005) disagreed with the DFO scoring but indicated that the Nass fishery was still above the MSC threshold for this indicator. The Team found that LRP's have been defined for the aggregate sockeye return to the Nass River and the Meziadin sockeye stock. LRP's have not been defined for any of the smaller sockeye stocks (e.g. Bowser, Damdochax, Kwinageese), therefore, the first scoring guidepost at the 80 SG was only partially met. It is anticipated that implementation of the WSP will include the definition of LRP's or their operational equivalent, in the near future. The Team's score was 75.
DFO Action Plan	In addition to the development and implementation of an overall Nass sockeye escapement monitoring plan described above and consistent with the regional approach and schedule for LRP development, DFO will work cooperatively with the First Nation interests in the watershed to develop Nass sockeye LRP's. Initially the discussions are expected to focus on the existing lake productivity assessments (to indicate capacity) for non-Meziadin sockeye stocks, and stock recruit analysis for Meziadin.

	Nass LRPs will be defined and reviewed by PSARC by December, 2011.
Observations from 1st Surveillance	A workshop was held and DFO has begun its analyses of lake productivity and other methods as a means to estimate LRPs for the smaller sockeye stocks. A 2010 PSARC report on Nass sockeye salmon provides technical information to support the development of reference points. This process will be analogous to that used for Skeena sockeye salmon. A report is expected in spring 2012. Although total escapements had been above the aggregate LRP for the Nass in years past, DFO reported that runs have been weak in recent years. The 2011 IFMP indicated that the aggregate escapement goal for the Nass River was increased from 200,000 to 225,000 sockeye as buffer for in-season run size uncertainty and to help rebuild stocks of concern
Conclusion from 1st Surveillance Report	**Some progress has been made. This condition will be evaluated at the next surveillance audit.**
Client Progress 2nd Surveillance	The report scheduled for the second audit was not yet available. A report funded by the Pacific Salmon Foundation reviewed the adult escapement and catch for CUs of each species in the north and central coasts (English et al. 2011) including the Nass. However, consultation requirements with FN's may delay finalization of the estimates resulting from this work. DFO provided the following new developments in defining sockeye LRP: The joint Nisga'a technical committee met in March 2012 to discuss technical aspects of benchmark analysis for all Nass salmon species. DFO indicated that and that the intent was to apply the CSAS standards for setting LRP's for the Nass, similar to the approach for the Stikine. The Nisga'a set LRPs back in 1988 but there has not yet been sufficient discussion to formally define LRPs, so the next step is to involve all FNs in a technical workshop to evaluate the data and approaches and provide advice on benchmarks. Problems on the Nass are more significant (e.g. issues re new power line construction). There is good work with the Nisga'a but challenges include relationships between FNs in the watershed. DFO indicated that LRP's should be forthcoming as most sockeye stocks are in good shape so it's not controversial. DFO indicated they were looking for funding for a Nass meting to meet with the two FNs and produce a report addressing LRP's. Kwinageese sockeye were identified as a significant stock of concern after very low weir counts in 2009 and 2010. DFO provided the following as steps in a sockeye salmon recovery plan for consideration for this audit: Kwinageese sockeye were identified as a significant stock of concern after extremely low escapements in 2010. The 2011 fishing plan introduced extraordinary measures (essentially a three week closure during the peak migratory period) to protect Kwinageese sockeye In additional, the Nass JTC was concerned that the evidence pointed to a blockage in the system. The Nisga'a identified the potential problem site in-season and initiated "the Kwinageese manoeuvre" that was completely successful in passing salmon (10,000 +) past the constriction The fishing plan includes the same Kwinageese measures for 2012. The PSC northern fund provided resources for 2012 to evaluate the Kwinageese blockage and recommend remediation
Observations	Although data have been compiled, monitoring has commenced on some of the smaller stocks

from 2nd Surveillance	and methodology has been developed for developing LRP's, the report originally scheduled for December, 2011 as part of the action plan and rescheduled for delivery as stated in the 1st Surveillance audit, this report was not developed as of August 7, 2012. Technically, there does not seem to be any obstacles but requirements for consultation with FN's in the area have created delays in development of official LRP estimates that falls within the MSC definitions. The fisheries harvest management plan has specifically targeted lowering ER on the Kwinageese sockeye stock, which has apparently been depleted because of a migration blockage, which has apparently been at least temporarily removed. We note that LRP's have been defined for the Nass River drainage, where lower river escapement enumeration is used as a management tool to regulate harvests of sockeye salmon. This level of monitoring and LRP definition has been used in other MSC certified sockeye salmon fisheries (Alaska) to meet MSC Principal 1 requirements. However, the Wild Salmon Policy and DFO's action plan requires that the individual conservation units have defined and measureable LRP's (or their functional equivalent) so the standard employed here is internally consistent with DFO's stated objectives for this fishery.
Conclusion from 2nd Surveillance Report	Based on the information presented to date, the team's conclusion is that the requirements of Condition 16 have not been met. The AT concluded that this condition is behind target as it was not met on the agreed schedule. As such, the AT have specified an additional milestone and deliverable timeframe in keeping with the requirements defined by the MSC Certification Requirements, version 1.2, Section 27.22, subnote 116: *Those fisheries who signed a certification contract prior to 7 February 2011 may apply the following in place of 27.22.8.1 b i:* *If progress against an interim milestone is judged to be behind target, the CAB shall specify the remedial action required, and if relevant, further milestones and scores to be achieved, and the time frame by which the milestone shall be achieved.* This condition remains open awaiting a report that defines the LRP for sockeye salmon for the CU's defined for the Nass River sockeye salmon. Progress has been made with both data and methodology available for completion of this task. Current delays in completion appear to be related to process, rather than lack of information or methodology. The lack of formal LRP definitions do not seem to impact management, as actions have been taken to address small system depleted stocks, indicating both data are available and decision criteria to curtail fisheries to protect weak stocks (below some assumed informal LRP), even though there has not been a formal definition. This condition will be evaluated at the 3rd surveillance audit.

3.11 Nass Conditions – Principle 2

Condition 23	Nass Sockeye Salmon Condition #1. Certification of the Nass sockeye salmon fishery is contingent upon developing and implementing a recovery plan for chum salmon stocks that are below the LRP and that spawn in the Nass or its tributaries. Such a plan must have clear procedures to determine the impact of the existing fishery management system on these stocks and provide for decreasing incidental harvest rates on chum salmon, if harvest pressure is found to have significant risks to chum recovery. To be completed within 2 years. **(Nass Condition 2.1)**
Assessed Activity	This Condition relates to Indicator 2.3.1. PI: Management strategies include provision for restrictions to the fishery to enable recovery of non-target stocks to levels above established LRPs (Limit Reference Points). 100 Scoring Guidepost • The management plans and escapement goals have been shown to have a high (>80%) probability of achieving a long-term recovery of depleted non-target stocks using risk analysis. • Historic data have been thoroughly examined to ensure fisheries restoration objectives are

based on the likely habitat capacity, rather than on trends that cover only the most recent decades, thus avoiding the "moving baseline" syndrome.

- Monitoring and assessment programs are established to determine with a high degree of confidence and in a timely manner that recovery is occurring.
- Proposed management strategies have been reviewed and found to be scientifically defensible and appropriate by the Pacific Scientific Advice Review Committee or the appropriate Pacific Salmon Commission technical committee.
- The management system supports the collection of data on non-fishing related human activity in the development of recovery plans for non-target stocks.

80 Scoring Guidepost

- The management system includes assessment of plans for the recovery of non-target stocks to levels above established LRPs.
- Objectives for recovery have at least some consideration of historic documents on stock abundance.
- The management system has a reasonable (>60%) probability of achieving long-term recovery of depleted non-target stocks.
- Monitoring and assessment programs are established to determine with a high degree of confidence and in a timely manner that recovery is occurring.
- Escapement goals will be revised periodically to accommodate new data indicating success or failure of existing recovery plans.
- The management system considers the impact of non-fishing related human activity in the development of recovery plans for non-target stocks

60 Scoring Guidepost

- The management system attempts to prevent extirpation of non-target stocks and does have rebuilding strategies for the majority of the stocks.
- The management system has at least a 50% probability of achieving long-term recovery of depleted non-target stocks.
- The management system has a strategy for periodic revisiting escapement goals to respond to new data on recovery success or failure for the majority of the stocks.

SCORE 73

The management agencies detail submission for Nass sockeye (DFO Nass 2004b, p.21-23) suggested a score of 95 was deserved and an independent review by David Levy (Levy 2005) agreed with this assessment. At the 80 scoring level, the Team disagree with DFO and the reviewer in that the chum salmon stocks that are impacted by this fishery are depleted and there is no recovery plan reducing scores on scoring elements 3, 5, and 6 at the 80 level while we did agree the existing monitoring plan was sufficient to meet scoring elements 1, 2 and 4. As there are no identified depleted sockeye salmon stocks on the Nass, the first two guideposts are not factors and we have no reason to believe that if stocks become depleted in the future, such factors will be considered in concert with the Wild Salmon Policy document. The third guidepost at the 80 level was considered partially met in that the Wild Salmon Policy provides guidance and considerations for depleted sockeye stocks.

We have been provided with ample evidence of major depletion of Nass chum salmon stocks that are intercepted in the marine fisheries for sockeye salmon and may be harvested in the inshore fisheries. There is no obvious process or a recovery plan for these chum stocks that limits the impact of fisheries on their harvest. There needs to be a process in place where any depleted non-target species will require a recovery plan with a reasonable chance of success. Without a risk analysis or other process that identifies the relative risk to the chum salmon (or other non-target stocks) of the existing fishery, the sustainability of these non-target stocks cannot be assured. The last guidepost was considered partially met in that the escapement monitoring and intensive scrutiny of habitat and development that impact the Nass fisheries is likely to occur with the broad based ownership of the fishery by the Nisga'a people.

The Team found that all of the 60 scoring guideposts were met because DFO has taken measures to prevent the extirpation of non-target stocks. While it is difficult to distinguish between a 50% probability of achieving long-term recovery at the 60 scoring level and a 60%

	at the 80 scoring level, the Team found that the management system has taken actions to reduce the impact of fisheries on the depleted non-target chum stock in recent years. Based on the deficiencies at the 80 scoring level regarding a recovery plan for Nass chum stocks, the Team's score for this indicator was 73.
DFO Action Plan	DFO will work cooperatively with the FN interests in the area to develop a chum rebuilding plan for Area 3 chum included chum spawning in the Nass River and its tributaries. Chum rebuilding has been an ongoing concern for DFO and significant changes have been made to the Nass area gillnet and seine fisheries over the past several decades. Time and area closures are the primary method used to reduce chum interceptions in fisheries directed at sockeye and pink salmon. Retention of chum salmon was not permitted by seines in Area 3 in 2009 and gillnet fisheries are currently requested to release live chum. More stringent measures for chum are under consideration, as most chum encountered by gillnets are currently retained. An important point is that the majority of the chum encountered in the Area 3 fishery does not originate from Area 3 which complicates management of the fishery. DFO, with contributions from Alaska has developed an extensive chum DNA baseline for North Central BC and some coverage for SE Alaska. We are currently analyzing Canadian Area 3 and 4 commercial fishery samples to better understand the harvest impacts on Area 3 chum. There is a linkage between the fisheries impacts on Nass and Skeena chum, and the Nass and Skeena rebuilding planning processes will need to be coordinated. The primary objective of a Nass Area rebuilding plan for chum is to halt the decline in chum abundance and ensure the aggregate escapement for each of the three Wild Salmon Policy conservation units (Portland Canal-Observatory, Portland Inlet, and Lower Nass) are in the amber zone or higher. To achieve this objective, non-retention regulations for chum are being considered for all Area 3 fisheries. Monitoring and compliance of these release fisheries will be an important component of the rebuilding plan for chum. A Nass Area chum rebuilding plan will include a stock monitoring plan to evaluate rebuilding against goals. The Nisga'a Fisheries Program continues to monitor escapements of chum salmon to the lower Nass River using fishwheels, escapements to the Kincolith River, and conducted a pilot chum telemetry study in the lower Nass in 2008, as a first step towards better understanding the timing and habitat uses of specific lower Nass chum stocks. DFO monitors the escapement of chum salmon to Area 3 streams using visual surveys and will use the core stock assessment program to guide future chum escapement monitoring. The development of escapement benchmarks (LRP) for the Area 3 chum aggregates in each conservation unit will be an important aspect of a chum re-building strategy. Analytical approaches to determining LRPs for chum are not well developed and much work needs to be done in this area. In the meantime, DFO will identify interim benchmark LRPs and rebuilding targets for Nass Area 3 chum. In 2010, the Nass Joint Fisheries Management Committee will review the current Nisga'a Treaty escapement goals for Nass Area chum and align those with the requirements of the Wild Salmon Policy. In addition, it is important to note that, although the Kincolith CEDP hatchery does provide some small-scale enhancement of Kincolith River chum, large-scale enhancement is not proposed at this time as part of the chum rebuilding plan. Should harvest restrictions be found to not be sufficient to enable Area 3 chum stocks to be sustained in the amber or higher zone, DFO will review the role enhancement and other habitat-related measures might play at that time. In addition, should scientifically sound enhancement or habitat restoration opportunities be identified for Area 3 chum in the future, these will be reviewed by DFO. LRPs will be developed for Nass chum populations and provided for PSARC review by December, 2011. Additional measures to reduce the Nass sockeye fishery impacts on Nass chum were incorporated in to the 2009 IFMP.
Observations from 1st Surveillance	Limited progress has been made on development and implementation of a Nass chum salmon recovery plan. A draft CSAP report was prepared that lays the groundwork for a more refined Nass chum management plan (Peacock 2011). This paper provided

	the following recommendations and conclusions: 1. A Nass chum recovery plan should be developed. 2. As an interim step, the 2010 Integrated Fisheries Management Plan (IFMP) should include an updated section on Area 3 - Nass chum. 3. Although there is no quantitative analysis in support, the management-recovery plan should take into account the trends and variability in return rates. 4. Area 3 - Nass chum index streams should be monitored each year using consistent methods. 5. An annual review, update and documentation of the chum enumeration plan should occur through the Nass JTC and other FN-DFO technical committees as appropriate for each CU. The Nass JTC should evaluate the potential for additional escapement indicator stocks in the Lower Nass CU, including a review of the utility of using the chum data from the Nisga'a fish wheels. 6. There should be an expansion of the Skeena model (Cox-Rogers, 2010) approach (to estimate weekly fishery impacts) using the run reconstruction model data (Alexander 2010) to estimate Canadian and Alaskan harvest impacts for sockeye stocks with different timing. The review of Gazey (2008) forms the base for this project. 7. The north coast chum DNA stock identification initiatives should continue with a work plan to address the outstanding issues and evaluate the potential contribution to Area 3 - Nass chum assessments. 8. We recommend an evaluation of status of chum salmon habitat for Area 3 - Nass chum streams as part of the recovery planning process. The IFMP mentions some measures to reduce bycatch of chum salmon, such as non-retention and mesh size restrictions, but a recovery plan is needed that critically evaluates actions to minimize harvest impacts on chum salmon.
Conclusion from 1st Surveillance Report	**The preparation of the CSAS working paper on Area 3 chum represents a first important step towards the definition of benchmarks and a recovery plan for Area 3 chum stocks. The progress on this condition appears to be consistent with that outlined in the DFO Action Plan and the condition is expected to be closed out at the next surveillance audit.**
Client Progress 2nd Surveillance	DFO did not provide a completed recovery plan with the elements defined in the draft CSAS report provided in the first surveillance audits DFO provided the following information in support of compliance with this condition: • DFO is committed to maintain reductions in the Nass chum harvest impact although DFO has not defined a specific ceiling (no LRP's defined for chums salmon although Nass chum have been identified as a "stock of concern"). Escapement trends indicate stock is still declining. • Index stream enumerations will continue. • The new abundance reconstruction methods coupled with the new assessment model are the tools required to determine the impact of the existing fishery management system on Skeena chum stocks as specified in condition 22 and will apply to condition 23.. • The extensive scope of new work provided in the English PSF report still requires detailed public examination and evaluation. • The combination of recent management actions have decreased incidental harvest rates as specified in condition 22 and condition 23. • Discussions are underway for a new approach for the 2012 season that provides for a fishery with very low impacts on Nass wild stocks, but allows for retention fisheries in times and places where US hatchery chum are very prevalent relative to wild chum.

	• The joint Nisga'a technical committee met in March 2012 to discuss technical aspects of benchmark analysis for all Nass salmon species (report not yet distributed). • Chum enumeration plan is in place for identified index streams and new methods were developed for estimating total escapement, Canadian and US ER and total stock abundance. (English et al. 2011). Estimates are based on weekly data. • The plan is to permit retention during a limited time period when models show that wild chum are very rare, with the fishery concentrated in the Tree Point area and using US data to manage it. Productivity for US stocks are higher than Canadian with the Dixon Entrance being a sharp dividing line, but the US is just starting to feel impacts of declining productivity. There is a huge difference in survival rates for Pallant Creek vs Alaska or Hokkaido. • DFO has secured funding from the PST northern fund (75 K) to sample and analyse otoliths from the Canadian Area 3 chum fishery. Next steps: As per response to Condition 16, DFO has proposed technical workshop for Nass FNs to discuss benchmarks, etc.
Observations from 2nd Surveillance	The management plans have developed specific actions to reduce harvests on Nass chums (see also descriptions of activities under Client progress for Condition 22). Based on the draft CSAS working paper identified in the First Surveillance audit, the following items identified are specifically reviewed. 1. ***A Nass chum recovery plan should be developed.*** No evidence of progress beyond First Surveillance Audit findings although DFO is taking specific actions to reduce chum harvests. 2. ***As an interim step, the 2010 Integrated Fisheries Management Plan (IFMP) should include an updated section on Area 3 - Nass chum.*** There is a section addressing Nass chum as a species of concern in the 2011 IFMP. 3. ***Although there is no quantitative analysis in support, the management-recovery plan should take into account the trends and variability in return rates.*** The actions being addressed are to reduce Nass Chum catch by minimizing harvest of local stocks while targeting US hatcher stocks. This is based on previous stock ID's and will require some in-season ID program if in-season variability is to be addressed. 4. ***Area 3 - Nass chum index streams should be monitored each year using consistent methods.*** Needs to be defined as part of the recovery plan 5. ***An annual review, update and documentation of the chum enumeration plan should occur through the Nass JTC and other FN-DFO technical committees as appropriate for each CU. The Nass JTC should evaluate the potential for additional escapement indicator stocks in the Lower Nass CU, including a review of the utility of using the chum data from the Nisga'a fish wheels.*** No evidence of progress provided. 6. ***There should be an expansion of the Skeena model (Cox-Rogers, 2010) approach (to estimate weekly fishery impacts) using the run reconstruction model data (Alexander 2010) to estimate Canadian and Alaskan harvest impacts for sockeye stocks with different timing. The review of Gazey (2008) forms the base for this project.*** Presentation indicated evaluation of data to reduce interception of local chum stocks through temporal closures when apparently Nass chum are most likely to be abundance.

	7. ***The north coast chum DNA stock identification initiatives should continue with a work plan to address the outstanding issues and evaluate the potential contribution to Area 3 - Nass chum assessments.*** Apparently funding is available to continue this activity. 8. ***We recommend an evaluation of status of chum salmon habitat for Area 3 - Nass chum streams as part of the recovery planning process.*** No evidence of progress provided.
Conclusion from 2nd Surveillance Report	Based on the information presented to date, the team's conclusion is that the requirements of Condition 23 have not been met. The AT concluded that this condition is behind target as it was not met on the agreed schedule. As such, the AT have specified an additional milestone and deliverable timeframe in keeping with the requirements defined by the MSC Certification Requirements, version 1.2, Section 27.22, subnote 116: *Those fisheries who signed a certification contract prior to 7 February 2011 may apply the following in place of 27.22.8.1 b i:* *If progress against an interim milestone is judged to be behind target, the CAB shall specify the remedial action required, and if relevant, further milestones and scores to be achieved, and the time frame by which the milestone shall be achieved.* Despite declining stocks and management actions to reduce interceptions during US hatchery based chum targeted fisheries, there is no ceiling LRP developed nor has there been significant progress in development of a recovery plan for chum salmon in the Nass River since the previous surveillance audit, beyond the information provided under the "observations" in the previous section. Although DFO is taking actions to reduce harvest rates on local chums as defined if the 2011 IFMP, it is unclear as to what measures are in place to determine if such a program is successful and what standards are being used to estimate the effectiveness on the program to meet the recovery objectives under the level 80 third scoring guideposts. Completion of this condition will be confirmed at the 3rd surveillance audit.

3	**Any complaints against the certified operation; recorded, reviewed and actioned.**
	There were no complaints received in relation to the certified operation.

4	**Any relevant changes to legislation or regulation.**
	There were no relevant changes in legislation found during the course of the first year of MSC certification.

5	**Any relevant changes to management regime.**
	There were a number of annual changes to the management regime for the fishery. These changes were fully described in the Integrated Fishery Management plans for both northern and southern regions. Most of the relevant changes refer to additional measures implemented to provide clear regulation of salmon fisheries in British Columbia.

8	**Overall Conclusions**
	The second surveillance audit for the MSC Certified British Columbia sockeye fishery concluded that there was significant progress made on many conditions due at both the first and second surveillance audits. There are 27 conditions due for the second annual surveillance audit cycle plus eight postponed conditions from year 1. Of these, the team evaluated progress on all and determined that there progress on all of these conditions. A total of six of the 35 conditions due at the second surveillance audit were closed out, the remainder will be evaluated at the third surveillance audit as per the requirements defined by the MSC Certification Requirements, version 1.2, Section 27.22, subnote 116: *Those fisheries who signed a certification contract prior to 7 February 2011 may apply the following in place of 27.22.8.1 b i:* *If progress against an interim milestone is judged to be behind target, the CAB shall*

	specify the remedial action required, and if relevant, further milestones and scores to be achieved, and the time frame by which the milestone shall be achieved. All open conditions will be evaluated at the third surveillance audit as per the requirements of MSC Certification Requirements, version 2.1. The surveillance audit team reviewed the progress on the remaining surveillance audit condition due for closeout by the third surveillance audit. The team confirmed adequate progress on remaining condition. The assessment team concludes that the MSC certification should continue.

4.0 Stakeholder Comments

Stakeholder participation in the 2012 BC sockeye annual surveillance audit was higher, both in terms of written submissions and verbal presentations to the assessment team. The audit team was particularly appreciative of the detailed consideration provided by all stakeholders. Active First Nation involvement in this surveillance audit was very informative and appreciated by the assessment team.

4.1 Written Submissions

Two written submissions were received, one from the North Coast Steelhead Alliance (NCSA) on May 17th and one from the Watershed Watch Salmon Society (WWSS) on May 28th. Both can be seen in Appendix A.

4.1.1 North Coast Steelhead Alliance Written Comments Responses

The North Coast Steelhead Alliance submission included the following:

- MSC template for stakeholder input which included contact information and Section 2, conflict of interest related to the participation of Karl English.
- A main submission document entitled "NCSA BC Sockeye Fishery 2012 Audit Submission",
- A 122 page document entitled "Economic Dimensions of Skeena Watershed Salmonid Fisheries", authored by Counterpoint Consulting in 2008.
- Commercial Salmon Advisory Board Revised Draft Minutes of the Catch Monitoring Working Group Meeting conducted on 21 February 2012.

The NCSA submission focuses on the following issues/ performance indicators, as defined below, along with the assessment team's responses within the surveillance audit report.

1. Conflict of Karl English as an Assessment Team Member.

   The perspective of the NCSA is that Karl English is fundamentally conflicted to be evaluating the sockeye and pink salmon fisheries because of both the company that he works for, LGL Limited, involvement in fisheries consulting for Fisheries and Oceans, as well as Karl English's direct work for both DFO and First Nations in the North and Central coast.

   IMM Response: IMM have responded through its complaint process to the concerns raised by Mr. Douglas on behalf of his organization, and subsequently to an investigation by Accreditation Services International (ASI), the independent accreditation body for MSC Conformity Assessment Bodies such as Intertek Moody Marine.

2 Condition 35c – NCSA concludes that Condition 35c has not been met by either DFO or industry

   IMM Response – See team response for Condition 35c above. While the team noted progress, it did not conclude that the condition had been met and will be evaluated again at the third surveillance audit.

3 Condition 35a – NCSA asserts there is no movement by DFO toward addressing this condition.

   IMM Response – See team response for Condition 35a above. The team management agency has developed a reasonable approach to estimate bycatch of steelhead in the Skeena sockeye fishery. The estimated harvest rate of steelhead was relatively low during 2007-2010. Given the high profile of Skeena steelhead, the AT encourages the management agencies to continue monitoring of steelhead bycatch in the Skeena fishery. This information satisfies the condition and the fishery meets the SG80 guideposts. The condition is closed.

4 Condition 35d – NCSA is of the opinion that DFO has not made any attempt to address this condition

IMM Response: – See team response for Condition 35d above. The team concluded that progress has been made and that DFO has largely complied with the requirements of the condition.

5 Condition 36b – NCSA contends that there is no evidence to show or reflect the required commitment specified in the condition.

IMM Response: The team concluded that there has been progress made and that DFO largely complied with the condition. On-going monitoring and enforcement of regulations will continue to be confirmed in future audits.

6 Condition 36c – NCSA opines that no visible action has been taken by DFO within the prescribed 2 year timeframe of the condition.

IMM Response: Response…

7 General Comments on Compliance – NCSA provide commentary on a DFO submitted document entitled "North Coast Area – Conditions 35C and 36B – MSC Certification for Skeena Sockeye". NCSA state they were not aware of the document being submitted and raise concerns about the vality of the information presented and utility of the measures described. NCSA also raises concerns about gaining access to the EcoTrust 2011 Observer Report. In summary, NCSA provide a variety of responses as to why this DFO submission document is untrustworthy.

IMM Response: The team provided their responses within the context of the two cited Conditions 35c and 36b, above.

4.1.2 Watershed Watch Salmon Society Written Comment Responses

The Watershed Watch Salmon Society (WWSS) submission included the following:

- A main submission document entitled "Fraser Sockeye 2012 audit". Received on 28 May 2012.

The WWSS submission focuses on the following issues/ performance indicators, as defined below, along with the assessment team's responses within the surveillance audit report.

1. The WWSS submission presents an analysis prepared by the Raincoast Conservation Foundation in support of the Fraser submission provided by the Pacific Salmon Foundation. The additional analysis is meant to demonstrate that DFO has not met the requirements of Conditions 6, 7, 8 and 19.

   IMM Response: The team concurred with the stakeholders that Conditions 6, 8 and 19 were not met during the second surveillance audit, and new requirements and timelines were prescribed for the 3rd surveillance audit. However, IMM notes that Condition 7 was in fact closed out after the 1st surveillance audit.

4.2 Presentations to the Audit Team during the Surveillance Audit

On May 18th, the assessment team heard testimony from both First Nation and ENGO stakeholders during presentations to the team. All stakeholders presented both a verbal presentation accompanied by a PowerPoint presentation. The four groups and the representatives who presented on their behalves, in order of appearance, included:

08:45 – 10:30 – Pacific Salmon Foundation – Greg Taylor
10:45 – 12:15 - Upper Fraser Fisheries Conservation Alliance – Brian Toth
13:00 – 14:20 – Skeena Wild Conservation Trust – Greg Knox, Michael Price (via telephone)
14:45 – 16:00 – Secwepemc Fisheries Commission – Pat Matthew

One common theme evolved from three of the presentations heard on May 18th, all in relation to the Fraser unit of certification. This theme relates to new information provided by DFO during the audit, in effect, the results of the evaluation of Fraser sockeye Wild Salmon Policy status. This information was presented in a

CSAS reviewed DFO publication by Grant *et al* in 2011, entitled "Evaluation of Uncertainty in Fraser Sockeye (*Oncorhynchus nerka*) Wild Salmon Policy Status using Abundance and Trends in Abundance Metrics." This information was subsequently evaluated in a workshop forum, where Fraser River sockeye status from various metrics was integrated into status zones as required by WSP. While there is a confidential draft report of the workshop findings, there is not a formalized publication available. The surveillance audit team did not receive the workshop findings document during its meetings with DFO. A copy was provided by stakeholders who had participated in the workshop process.

The audit team considered the importance of the confidential draft report, specifically it considered both the internal DFO processes and the MSC process. From the perspective of the DFO internal scientific review process, the team unanimously agreed that it would not be appropriate to prematurely consider information that had not completed the internal review and vetting procedures of CSAS. As scientists, the team respects the necessity for completion of the review process. Therefore, it would also be inappropriate to judge the management agency's performance on responding to the information when, in fact, the scientific process was not yet completed nor the management response to the new information defined. From the MSC process perspective, while stakeholders pointed out the team has an obligation to consider new information, the team agreed that at the time of the 2012 audit, the information was incomplete. This interpretation was discussed with MSC Fisheries Assessment team, who agreed that it was not appropriate to judge performance of the management agency on the basis of an incomplete, non-citeable report.

Finally, it is important to point out that this stock status review relates to a number of MSC performance indicators for the Fraser which scored less than 80 during the original certification assessment, hence conditions of certification were prescribed and agreed to by the client. None of the relevant performance indicators and associated conditions were deemed to have met the deficient 80 scoring guideposts during the 2012 surveillance audit. None of these key conditions were closed out in 2012. New milestones and deliverable timelines were issued and these conditions will be evaluated in 2013.

4.2.1 Pacific Salmon Foundation Presentation Responses

Greg Taylor, on behalf of the Pacific Salmon Foundation (PSF), lead the team through a 50 page presentation, see Appendix B, on a variety of issue of concern to the PSF. The discussion followed the provided presentation quite closely. Mr. Taylor provided a number of documents to the assessment team, including a main presentation and two supporting documents and numerous reference materials, as follows:

- Audit Presentation.pptx
- Pacific Salmon Foundation. 2012. Submission to 2012 MSC Surveillance Audit: Fraser Sockeye Benchmarks and Rebuilding.
- Pacific Salmon Foundation. 2012. Skeena River Sockeye Second in a Series of Five Reports for First Nations and Stakeholders Participating in the 2012 Audit of BC's MSC Certified Fisheries

- Babcock, E.A., E. K. Pikitch and C.G. Hudson. 2003. How much observer coverage is enough to adequately estimate bycatch? Report of the Pew Institute for Ocean Science, Rosenstiel School of Marine and Atmospheric Science, University of Miami, Miami, FL. On-line version: http://na.oceana.org/sites/default/files/o/fileadmin/oceana/uploads/dirty_fishing/How_Many_Eyes_Do_We_Need_on_the_Ocean_Final.pdf
- Baker, M.R. and D. E. Schindler. 2009. Unaccounted mortality in salmon fisheries: non-retention in gillnets and effects on estimates of spawners. Journal of Applied Ecology, Vol. 46, pp 752-761.
- Bijsterveld l., S. Di Novo, A. Fedorenko, and L. Hop Wo. 2002 Comparison of Catch Reporting Systems for Commercial Salmon Fisheries in British Columbia. Canadian Manuscript Report of Fisheries and Aquatic Sciences 2626
- Donaldson, Michael R, Scott G. Hinch, David A. Patterson, Jayme Hills, Jim O. Thomas, Steven J. Cooke, Graham D. Raby, Lisa A. Thompson, David Robichaud, Karl K. English, Anthony P. Farrell, The consequences of angling, beach seining, and confinement on the physiology, post-release behaviour and survival of adult sockeye salmon during upriver migration, Fisheries Research, Volume 108, Issue 1, February 2011, Pages 133-141, ISSN 0165-7836
- FAO. 2010. Technical Consultation to Develop International Guidelines on Bycatch Management and Reduction of Discards. TC-BM/2012/2.
- Fisheries and Oceans Canada. 2012. Minimum Standards Summary. Excel Spreadsheet.

- Fisheries and Oceans Canada. 2011. Policy and Practice Report Fishery Monitoring and Catch Reporting for Commercial and Aboriginal Fraser River Sockeye Salmon Fisheries. 17 March 2011. Submission to Cohen Inquiry.
- Fisheries and Oceans Canada. Date unknown. Guidance for the Development of Rebuilding Plans under the Precautionary Approach (PA) Framework: Growing Stocks out of the Critical Zone.
- GSGislason & Associates Ltd. 15 – 18 May 2007. Commercial Catch Monitoring: Gatekeeper to Sustainability and Public Confidence in Pacific Canada. Paper Presented to 5th International Observer Conference.
- International Seafood Sustainability Foundation. 2010. A Call for the Adoption of Best Practices for Bycatch Mitigation by Tuna RFMOs. Presentation to International Workshop on tuna RFMP management issues relating to bycatch. Brisbane, Australia, 23 – 25 June 2010.
- Taylor, G. 14 May 2012. Catch Reporting and Compliance Monitoring in BC's Salmon Fisheries.
- Underwood, T.J., J.F. Bromaghin, and S.P. Klosiewski. 2004. Evidence of Handling Mortality of Adult Chum Salmon Caused by Fish Wheel Capture in the Yukon River, Alaska. North American Journal of Fisheries Management 24:237–243.
- Velez-Espino, L.A., R.E. McNicol, G. Brown and C.K. Parken. 2010. Correction Factors for Numbers of Released Chinook Salmon reported in commercial troll logbooks: Expanding the Applications of the Observer Program. Canadian Manuscript Report of Fisheries and Aquatic Sciences. 2898.

Intertek Moody Marine responses to concerns raised by PSF are embedded within the PSF presentation in Appendix B.

4.2.2 Upper Fraser Fisheries Commission Alliance Presentation Responses

Brian Toth, a biologist and the Executive Director of the Upper Fraser Fisheries Conservation Alliance presented a 24 page Powerpoint document to the team, see Appendix B for a copy of the presentation and the IMM responses to significant points raised by Mr. Toth. The Upper Fraser Fisheries Conservation Alliance (UFFCA) is a Prince George-based non-profit society mandated to work towards the fisheries related interests of the First Nations in the upper Fraser River watershed.

Mr. Toth's presentation focused on the Fraser unit of certification and can be summarized as follows. "New" information is available (that has, in the opinion of the UFFCA, undergone adequate peer review and scrutiny, to be considered by the Surveillance Audit Team) that documents the status of several Fraser sockeye stocks as being below levels of population abundance that demonstrate a substantive conservation concern, and would definitively indicate that (passive and facilitated) rebuilding-recovery are required, and that MSC Principle 1 and related Criteria are not being achieved.

Information was presented to…

1. Provide stock/CU-specific examples of population declines and diminished abundance and relate them to recently completed assessments relating to stock/CU status
2. Outline how the specific situations described are analogous to previously imposed Conditions on the Conditional MSC Certification of the Fraser sockeye Certification Unit
3. Identify "new" or "renewed" Conditions for Conditional MSC Certification of the Fraser sockeye Certification Unit, and request their inclusion within the findings stemming from this audit advising the MA that their management framework must incorporate mechanisms to reflect the "new" or "renewed" Conditions during 2012 management, and beyond.

The intent of the presentation of "New" information was to provide the MSC Surveillance Audit Team with ample rationale to institute additional Conditions on the MA (in relation to the Fraser sockeye Certification Unit) to compel further change in their management framework towards full-achievement of the intent of MSC Principles and Criteria, and the implementation of Canada's Wild Salmon Policy in the manner in which it was Consulted and intended.

Further, (in a subsequent written submission) the components of the MA's management framework that have led to their failure to recognize/detect and adequately respond to the documented stock/CU-specific population declines presented will be outlined and related to MSC Principle 3, and specifically Condition 29 – Fraser Condition #3.6, which were, in the opinion of the UFFCA, incorrectly assessed and scored, resulting in the Condition being prematurely closed-out.

IMM responses listed below correspond to numbered comments within the UFFCA presentation, as identified by "IMM Response #".

IMM Comment 1: The team has considered the new information, most significantly, the benchmark information provided in Grant *et al*, 2011. The team considered this information in its evaluation of Conditions 5 and 6, for the Fraser unit of certification.

IMM Response 2: The team has considered the information provided in Grant et al, 2011. While Sue Grant of DFO confirmed that these benchmarks are established as 4 year averages to assess stock status for each conservation unit (CU) over a 4 year period under the Wild Salmon Policy (WSP). These benchmarks are not equivalent to the LRPs and TRPs (annual management benchmarks) needed to make decisions regarding fishery openings and closures. These 4-year average WSP benchmarks are not informative for the management of highly cyclic stocks which represent several of the largest stocks in the Fraser watershed. The team accepted that the analysis was partially completed but that the critical task of developing management benchmarks (LRP, TRPs) is not completed. Conditions 5 and 6 were not closed and new milestones were issued, specifically to require DFO to complete the development of LRPs and TRPs.

IMM Response 3: The team considers the WSP stock status information prepared by Grant *et al,* 2011 to be an important step toward the development of LRP and TRPs for the Fraser stocks, however, the requirements of Conditions 5 and 6 remain unmet.

IMM Response 4: While the UFFCA are not in agreement with the 2011 surveillance audit result for Condition 29, the team evaluated the evidence provided by DFO within the context of the performance indicators and scoring guideposts, as they were mandated to do. The information provided was judged by the team to have met the requirement of the outstanding SG80 scoring issue, "The management system is found to be in compliance with all the legal and most of the customary rights of First Nation peoples that are impacted by the fishery."

4.2.3 Skeena Wild Conservation Trust Presentation Responses

Greg Knox, Executive Director of the Skeena Wild Conservation Trust (SWCT) and his colleague, Michael Price, presented a 14 pate Powerpoint document to the team, see Appendix B for a copy of the presentation. IMM responses to significant points raised by Dr. Knox can be seen below. SWCT have been a participant in the BC Sockeye assessment both during the assessment and post-certification, during the annual surveillance audits.

Dr. Knox provided a number of documents to the assessment team, including a main presentation and two supporting documents and numerous reference materials, as follows:

- SWCT. May 2012. MSC BC Sockeye Annual Audit – Progress Assessment.

- DFO, Long. G., Robin G., (2008), WSP Hatchery Risk Assessment Tool (HRAT), User & Administrator Guide. Department of Fisheries & Oceans.
- Price, M.H.H. (2012). Do artificial spawning channels negatively affect wild salmon? North American Journal of Fisheries Management (in review).
- Price, M., (2012). Evaluation of whether Cox-Rogers and Spilsted's (2012) report satisfies Condition 13 of the Marine Stewardship Council certification of Skeena River sockeye salmon. Prepared for SkeenaWild Conservation Trust.
- Price, M.H.H. (2012). Potential effects of Spawning Enhancement on Wild Babine Sockeye: a Review. Prepared for SkeenaWild Conservation Trust.
- Price, M.H.H., Gayeski, N., and Stanford, J. 2012. Historical abundance of chum salmon (Oncorhynchus keta) returning to the Skeena River watershed. (in review).
- Rose, K.A. and J.H. Cowan Jr. 2003. Data, Models, and Decisions in U.S. Marine Fisheries Management: Lessons for Ecologists. Annu. Rev. Ecol. Evol. Syst. 2003. 34:127–51.
- Rose and Cowan overlay Korman.jpg.
- Unattributed Author. Shortcomings of MSY in Setting Benchmarks and Management Objectives.

- Unattributed Author. Skeena Benchmark Development: Rose and Cowan vs. Korman Skeena Sockeye data
- Sockeye Rose and Cowan Fraser and Skeena.xlsx spreadsheet

IMM responses to the concerns provided by SWCT are provided below. The response numbering corresponds to embedded comments within the SWCT Powerpoint presentation attached in Appendix B.

IMM Response #1: Please see conclusion from 2nd Surveillance Audit above. The assessment team concluded that Condition 13 had not been completed. A new milestone and delivery timeline (3rd surveillance audit) have been prescribed. The final benchmark analysis being produced by Korman and Cox-Rogers, should describe how harvest management will be implemented in the fishery in order to achieve the benchmarks (e.g., apparently by managing timing groups). Furthermore, the benchmark report should describe the extent to which the adopted benchmarks and in-season management will conserve the majority of wild CUs, including the two or three CUs in Babine Lake.

IMM Response #2: Please see conclusion from 2nd Surveillance Audit above. The assessment team concluded that Conditions 5 and 6 had not been completed. New milestones and delivery timeline (3rd surveillance audit) have been prescribed.

IMM Response #3: Please see conclusion from 2nd Surveillance Audit above. The assessment team concluded that Condition 13b has not been completed. New milestones and delivery timeline (3rd surveillance audit) have been prescribed. This condition cannot be closed out until the updated Core Stock review is finalized and it demonstrates the implementation of spawning escapement and fall fry monitoring.

IMM Response #4: Please see conclusion from 2nd Surveillance Audit above. The assessment team concluded that Condition 13c has not been completed. New milestones and delivery timeline (3rd surveillance audit) have been prescribed. This condition will remain open until the stock-recruitment analysis for each non-target sockeye CU (where data are available) and the associated life cycle productivity analyses have been finalized (e.g., draft Korman analysis). This report should provide some evidence, perhaps from productivity surveys of plankton or juvenile salmon, that the unmonitored CUs will be sustained.

IMM Response #5: Please see conclusion from 2nd Surveillance Audit above. The assessment team concluded that Condition 22 has not been completed. New milestones and delivery timeline (3rd surveillance audit) have been prescribed. The management agency should define chum LRPs and TRPs in a recovery plan so that specific metrics are available for setting harvest rates when natural mortality of chum salmon is reduced and stock abundance begins to increase.

IMM Response #6: Please see conclusion from 2nd Surveillance Audit above. The assessment team concluded that Condition 21b has not been completed. New milestones and delivery timeline (3rd surveillance audit) have been prescribed. This condition will remain open until TRPs and LRPs for Skeena sockeye have been formally adopted and harvest control rules have been developed to achieve the TRPs.

4.2.4 Secwepemc Fisheries Commission Presentation Responses

Pat Matthew, the Fisheries Management Coordinator with the Secwepemc Fisheries Commission (SFC) presented a 20 page presentation describing the SFC, their mandate and the SFC's concerns with the MSC certification of the Fraser UoC. Secwepemc Fisheries Commission is a fisheries organization formed in 1992 that works within the mandate of the Secwepemc communities and Tribal Chiefs. SPC supports the work of its communities to provide stewardship for the fisheries in their territories and to assert the traditional fisheries rights within a co- management framework.

Mr. Matthew presented a 20 page presentation and submitted a secondary supporting submission on May 28th. The documents are entitled as follows:

- Secwepemc Fisheries Commission – Marine Stewardship Certification – May 18, 2012.
- Secwepemc Fisheries Commission (SFC) Recommendations on 2012 Surveillance Audit of BC's Marine Stewardship Council Certification of BC Sockeye Salmon Fisheries. – May 28, 2012.

IMM responses to the concerns identified by SFC are provided below. The response numbering corresponds to embedded comments within the SWCT Powerpoint presentation attached in Appendix B.

IMM Response 1: Please see conclusion from 2nd Surveillance Audit above. The team has considered the new information, most significantly, the benchmark information provided in Grant *et al*, 2011. The team considered this information in its evaluation of Conditions 5 and 6, for the Fraser unit of certification. Both the performance indicators associated with Condition 5 (PI 1.1.3.1) and Condition 6 (PI 1.1.3.2) have a scoring guidepost specifically defined to evaluate "scientific disagreement", to date, the team has not considered those guideposts to have been met.

IMM Response 2: Please see conclusion from 2nd Surveillance Audit above. The team recognizes the importance of the WSP benchmarks defined in Grant *et al* however, does not accept that these benchmarks are useful annual management objectives. As such, Conditions 5 and 6 remain open.

IMM Response 3: Please see conclusion from 2nd Surveillance Audit above. The team accepts that the Grant *et al* benchmarks are informative of poor stock status for a number of Fraser stocks. However, the team concluded that the resource management process of appropriately adjusting harvest strategy to bring exploitation rates into alignment with stock status is not complete. The team will be evaluating the progress on setting management objectives at the next surveillance audit as required by Conditions 5 and 6. The team will also evaluate whether management performance in relation to Indicator 1.2.1 (There is a well-defined and effective strategy, and a specific recovery plan in place, to promote recovery of the target stock within reasonable time frames), has changed.

IMM Response 4: Please see conclusion from 2nd Surveillance Audit for Condition 27 above. The team did not close out Condition 27. The condition remains open until a stock assessment or research plan has been provided and evaluated.

Information Sources:

Meetings

Stakeholder meetings were conducted May 15 - 18, 2012. Information sessions were organized by the Units of Certification. The Sessions, dates and participants are listed below.

May 15, 2012

North Central Coast Update

Intertek Moody Marine/ Assessors: Steve Devitt, Chair; Karl English, Greg Ruggerone, Dana Schmidt

DFO: Paul Ryall, Arlene Tompkins, Dave Peacock, Mark Saunders, Steven Groves, Peter Hall, Dale Gueret, Jeanette LaPointe,

Canadian Pacific Sustainable Fisheries Society: Christina Burridge, Rob Morley

Notetaker: Dawn Steele

May 16, 2012

Barkley Sound and Fraser Updates

Moody Marine/ Assessors: Steve Devitt, Chair; Karl English, Greg Ruggerone, Dana Schmidt

DFO: Paul Ryall, Arlene Tompkins, Jeff Grout, Diana Dobson, Michael Folkes, Ann-Marie Huang, Matthew Parslow, Sue Grant (by conference call).

Canadian Pacific Sustainable Fisheries Society: Christina Burridge, Rob Morley

Notetaker: Dawn Steele

May 17, 2012

Close out Meeting

Moody Marine/ Assessors: Steve Devitt, Chair; Karl English, Greg Ruggerone, Dana Schmidt

DFO: Paul Ryall, Arlene Tompkins, Jeff Grout

Canadian Pacific Sustainable Fisheries Society: Christina Burridge, Rob Morley

Notetaker: Dawn Steele

May 18, 2012

Moody Marine/ Assessors: Steve Devitt, Chair; Karl English, Greg Ruggerone, Dana Schmidt

08:45 – 10:30 – **Pacific Salmon Foundation**: Greg Taylor

10:45 – 12:15 - **Upper Fraser Fisheries Conservation Alliance:** Brian Toth

13:00 – 14:20 – **Skeena Wild Conservation Trust**: Greg Knox, Michael Price (via telephone)

14:45 – 16:00 – **Secwepemc Fisheries Commission**: Pat Matthew

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Standards and Guidelines used:

1. MSC Principles and Criteria for Sustainable Fishing
2. MSC Certification Requirements, version 1.2. January 2012.
3. MSC Guidance to the MSC Certification Requirements, version 1.1. January 2012.

Appendix A – Written Submissions

North Coast Steelhead Alliance Submission

Watershed Watch Salmon Society

Appendix A – Written Submissions

North Coast Steelhead Alliance Submission

Contact Information Make sure you submit your full contact details at the first phase you participate in a specific assessment process, subsequent participation will only need your name unless these details have changed.					
Contact Name	*First* KEITH		*Last* DOUGLAS		
Title	CHAIRPERSON				
On behalf of (organisation, company, government agency, etc.) – *if applicable*					
Organisation	*Please enter the legal or registered name of your organisation or company.* NORTH COAST STEELHEAD ALLIANCE				
Department					
Position	*Please indicate the position or function you exert within your organisation or company.*				
Description	*Please provide a short description of your organization.* A steelhead/salmon conservation and advocacy group				
Mailing Address, Country	P.O. Box 3106 Smithers, British Columbia V0J 2NO				
Tel	+ 250-847-5016	**Mob**	+	**Fax**	+
Email	**douguide@telus.net info@steelheadalliance.com**			**Web**	www.steelheadalliance.com

Assessment Details	
Fishery	BC Sockeye, with focus on Skeena/Nass
Certification Body	Intertek

Assessment Stage	Fishery	Date	Name of Commenter or Organisation
Fishery announcement and stakeholder identification[i] *Opportunity to indicate that you are a stakeholder and identify other stakeholders*			

Nature of Comment (select all that apply)		Additional Information/Detail Please attach additional pages if necessary.
e.g. ☒ ☐	I wish to indicate that I am a stakeholder in this fishery, please keep me informed about each stage of the assessment process	*Example: My company has been operating five charter boats for recreational fishing on this fish stock for 20 years, and I would like to be informed and involved as this MSC assessment progresses. In addition, we have kept detailed logs over the years of our clients' catches, including sizes, weights, and fish caught per trip and would be happy to share these with the assessment team.*
☐	I wish to suggest information or documents important for the assessment of this fishery *(you may either attach documents or provide references)*	
☐	I wish to suggest other individuals or organizations who should be considered stakeholders in the MSC assessment of this fishery *(please name them with contact information)*	
☐	Other *(please specify)*	

• **SECTION 2** • Return to Page 3

Assessment Stage	Fishery	Date	Name of Commenter or Organisation
☒ **Assessment team formation**[ii] *Opportunity to comment on the assessment team*			
☐ **Client and peer review**[iii] *Opportunity to comment on proposed peer reviewers*			

Nature of Comment (select all that apply)		Justification Please attach additional pages if necessary.
☐	I believe this team member/peer reviewer does not have appropriate demonstrated technical expertise to perform this role[iv] *(please provide justification as to why)*	*Example: I have noted that a requirement of the assessment team is to have current knowledge of the country, language and local fishery context. After looking at the CVs of the proposed assessment team members, I have difficulty understanding how this requirement is met, as the fishery is in Indonesia, and all the team members are British, with backgrounds in European fisheries.* In the past, our group has presented a conflict of interest issue with Assessment Team member Karl English. The replies we have to date from Intertek et al do not alter our view. How you can expect the public to believe no conflict exists just because the AT member signed a form and 'promised' to adjudicate without prejudice? The appearance of conflict with Mr English exists because it is so readily apparent to any reasonable person. How could it not be viewed as a conflict when a person whose business is the largest single consultant for the federal management agency (DF)) and concurrently works on Assessments of their management actions. Moreover, Mr English's consulting company takes on projects for the commercial fishing industry and various First Nations. How can a person so tied to these various groups via business transactions be in a position to adjudicate on management actions that affect them, or in the case of DFO that they are responsible for? No reasonable person could assume anything but a conflict of interest in this situation. The choice for Mr Englsih should be a clear one: either work for industry and/or DFO, or work for Certification companies, but not both. Our group, and the public, continue to be amazed your Certification company refuses to acknowledge and deal with this most basic conflict.
☒	I believe a team member/peer reviewer has a conflict of interest *(please provide justification as to why)*	
☐	I wish to propose alternative or additional team member(s)/peer reviewer(s) (please include relevant details about your proposed team members/peer reviewers)	
☐	Other *(please specify)*	

Assessment Stage	Fishery	Date	Name of Commenter or Organisation
☐ **Defining the assessment tree**[v] *Opportunity to review and comment on the assessment tree in relation to the fishery*			

Nature of Comment (select all that apply)		Additional Information/Detail Please attach additional pages if necessary.
☐	I **DO NOT** believe the default FAM assessment tree (including Performance Indicators and/or Scoring Guideposts) is appropriate to assess this fishery against the MSC environmental standard *(please provide details and rationale).*	*Example: This is an unusual fishery, in that there is significant habitat modification to the area from the growing structures in place. I think the default set of performance indicators in the FAM do not evaluate this type of impact well. Therefore I think the assessment team should consider adding some additional performance indicators against which to evaluate the impacts of the habitat modification that doesn't exist in normal capture fisheries.*
☐	I **DO NOT** believe the proposed modifications to the FAM assessment tree are appropriate to assess this fishery against the MSC environmental standard *(please provide details and rationale).*	
☐	I wish to suggest modifications to the FAM for the purposes of assessing this fishery against the MSC environmental standard *(please provide details and rationale).*	
☐	I **DO NOT** think the RBF should be used to assess Performance Indicator(s) (select all that apply below), because there is sufficient information available to follow the conventional process[vii] *(please provide details and rationale).* ☐ 1.1.1 ☐ 2.1.1 ☐ 2.2.1 ☐ 2.4.1 ☐ 2.5.1	

☐	I **DO** think the RBF should be used to assess Performance Indicator(s) (select all that apply below) because there is NOT sufficient information available to follow the conventional process[vii] *(please provide details and rationale).* ☐ 1.1.1 ☐ 2.1.1 ☐ 2.2.1 ☐ 2.4.1 ☐ 2.5.1	
☐	Other *(please specify)*	

Assessment Stage	Fishery	Date	Name of Commenter or Organisation
Information gathering and stakeholder meetings[viii] *Opportunity to engage with and provide information to the certifier*			

Nature of Comment (select all that apply)		Additional Information/Detail Please attach additional pages if necessary.
☐	I wish to request an in-person meeting with the assessment team during their assessment visit (meetings without the fishery client present may be requested at this phase of the process if needed)	*Example: I am unable to attend the scheduled on-site meetings with the assessment team about this fishery, but would like to ensure the following documents are considered when the team reviews the available information:* *1. Doc A; 2. Doc B; 3. Doc C.* *All of these are available for download at the following web address…* Our NCSA BC Sockeye Audit Submission will be attached to an email to Mr Devitt along with this form.
☒	I wish to submit written information about the fishery and its performance against the FAM and/or RBF to the assessment team *(please provide documents or references).*	
☐	Other *(please specify)*	

Assessment Stage	Fishery	Date	Name of Commenter or Organisation
Public review of the draft assessment report[ix] *Opportunity to review and comment on the draft report, including the scoring of the fishery*			

☐ I wish to comment on the evaluation of the fishery against specific Performance Indicators.
A table with these indicators and the scores and rationales provided by certifiers can be found as an appendix to the report.

Nature of comment *(Please code below)*

1. I do not believe all the relevant information[x] available has been used to score this performance indicator *(please provide details and rationale)*
2. I do not think the information and/or rationale used to score this performance indicator is adequate to support the given score[xi] *(please provide details and rationale)*
3. I do not believe the condition(s) set for this performance indicator are adequate to improve the fishery's performance to the SG80 level[xii] *(please provide details and rationale)*
4. Other *(please specify)*

Performance Indicator	Nature of Comment Indicate relevant code(s) from list above.	Justification Please support your comment by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.
Example: 1.1.2	*2*	*The certifier gave a score of 80 for this PI. The 80 scoring guidepost asks for a target reference point that is consistent with maintaining the stock at Bmsy or above, however the target reference point given for this fishery is Bpa, with no indication of how this is consistent with a Bmsy level.*

Comment	Nature of Comment	Justification Please attach additional pages if necessary.
☐ I wish to comment on the adequacy of the consultation process used to gather information about this fishery (for example, related to the RBF process, selection of stakeholders consulted, etc.)		

Comment	Nature of Comment	Justification Please attach additional pages if necessary.
☐ I wish to comment on other portions of the report (e.g. background information, species biology, peer review reports and CB responses, list of consultees, etc.)		

Comment	Nature of Comment	Justification Please attach additional pages if necessary.
☐ I wish to provide general comments about the assessment of this fishery against the MSC Principles and Criteria for Sustainable Fishing		Please see attached NCSA Submission

Assessment Stage	Fishery	Date	Name of Commenter or Organisation
Announcement of surveillance visit[xiii] *Opportunity to provide information to the certifier*			

Nature of Comment (select all that apply)		Justification Please attach additional pages if necessary.
☐	I wish to alert the assessment team to important changes in relation to the circumstances of this fishery relevant to the MSC assessment.	*Example: Since this fishery was certified 2 years ago, government scientists have been working closely with the fishery client to develop a system for monitoring stock status capable of ensuring a precautionary harvest strategy. Although not published, the progress on this work to date can be found in the following report (attached)…*
☐	I wish to provide information relevant to fulfilment of the conditions of certification.	
☐	Other *(please specify)*	

Steven Devitt

Intertek

Suite 202, 10310 124 Street

Edmonton, Alberta

TSN IR2

May 11, 2012

RE: NCSA BC Sockeye Fishery 2012 Audit Submission

Dear Mr. Devitt and Audit Assessment team,

The North Coast Steelhead Alliance is a group committed to securing the escapement of wild steelhead in sufficient numbers to sustain healthy wild steelhead stocks and a robust sport fishery in northwestern British Columbia. The NCSA is dedicated to working with all levels of government, industry, community and stakeholder groups to preserve Skeena steelhead.

We would like to add our feedback and comments to the 2012 Surveillance Audit of the BC Sockeye Fishery, specifically the Skeena and Nass fisheries.

Overview:

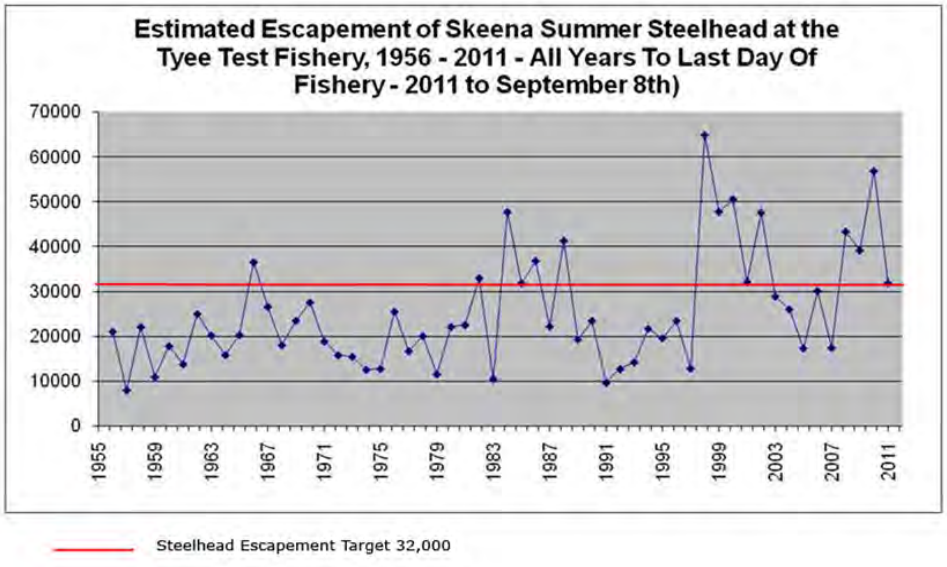
The NCSA is primarily concerned with commercial fisheries due to the negative impacts they have on non-target species such as Skeena river summer-run steelhead. Skeena summer-run steelhead support a successful, vibrant, and growing sport-fishing and tourism associated economy in northwest BC. Skeena steelhead are a very valuable natural resource with their individual value to the sport-fishing tourism economy being measured in the hundreds, if not thousands, of dollars per fish.

Since the late 1800's with the start of indiscriminate industrial scale commercial fishing activity on the north coast, Skeena steelhead have been negatively impacted by commercial fisheries. It would not be an overestimate to state that at present Skeena steelhead populations are one third of their historical levels and that this decline can be directly attributed to the impacts of commercial fishing.

The negative impacts continue to this day as every summer the Department of Fisheries facilitates the needless killing of thousands of valuable Skeena steelhead during commercial fishing openings aimed at sockeye and pink salmon.

Of special concern to us is the fact that the bulk of these steelhead killed by commercial fisheries are from the early timed component of the run. These early run fish are the most valuable and important to the sport-fishery due to the fact that they arrive the earliest and stay the longest, thus providing the most opportunity and availability for the sport-fishing tourism season.

The present attitude of DFO towards steelhead is that no conservation concern exists and therefore no special management action will be taken to protect steelhead from commercial fishing impacts. May we remind both DFO and your Assessment Team that over the past 56 years since the start of the Tyee Test Fishery, the escapement target for Skeena steelhead has only been met or exceeded 11 times? And in all the years where the escapement didn't meet the goal, the Department changed absolutely nothing in its fishery management and allowed commercial fishing to negatively impact the under escapement level steelhead returns. This fact does not reflect any precautionary approach in management by DFO for steelhead. Why isn't it part of Condition 35D that part of the Plan requested describe trigger point for steelhead, where no commercial fishing is allowed until a certain minimum steelhead Index level at Tyee has been reached? We note sockeye are managed in this manner yet steelhead don't seem to warrant any special treatment by DFO. See BC FLNRO Graph below for long-term steelhead escapement trend.



Furthermore, while recent trends seem positive in the aggregate for steelhead this does not allow DFO or the Certifier to assume that no special consideration is required in their management. The concern over the negative commercial impacts on the early run component of the steelhead return is still very much a reality. Remember, the early run is not only the most important to the sport-fishery but has also disproportionately absorbed the most negative impact from commercial fishing over the years. There is not enough information on these early returning fish populations to allow managers or Certifiers to assume or presume there is no conservation concern or that individual populations are not of concern with regard to being impacted by commercial fishing.

Moreover, since this Certification process involves shaping long-term fishery planning, our group is concerned with the potential of future fisheries. Most notably the situation whereby a large sockeye return and fishery, with an accompanying high exploitation rate provided by DFO's sliding sockeye exploitation scale, is prosecuted over a poor steelhead return. This situation could easily inflict severe impacts upon the steelhead population. For proof of our concern with DFO fishery management, look no further than the 2007 season with its record low early steelhead return numbers at the Tyee Test Fishery and where DFO still sanctioned commercial openings even with 50 year record low steelhead returns. This kind of potential for careless management means every fishing year has the potential for conservation concerns for steelhead, especially valuable early returning fish.

And while the MSC Certification process claims to not be mandated to eliminate by-catch of non-target species, the management framework direction outlined by both the Certifier and the management agency strongly implies that by-catch is a serious problem for the sockeye fishery and that it will be addressed prior to full Certification. In our opinion, counting dead steelhead is not dealing with the problem it is just enumerating the problem. Concrete measures need to be implemented in these fisheries and if avoidance, as the ISRP suggests, is the best tool for the job then serious consideration should be given to closing historically high steelhead interception areas such as River-Gap-Slough to non-selective commercial fishing techniques. Continuing to attempt to dress up gillnets as a selective gear type and technique is not a viable option to address the issue or the Conditions in this process.

STEELHEAD RELATED CONDITIONS:

Condition 35c:

Certification is conditional until the management agencies and the terminal gillnet fisheries demonstrate their commitment to implement selective fishing and handling techniques that have been shown to increase the post-release survival of non-target species, within one year

Action Plan Summary: This challenge is expected to be a particular focus of Skeena watershed discussions. There has been extensive research over the last 15 years to evaluate selective harvest approaches. Many of these have been implemented, resulting in very significant changes to commercial

fishing seasons, geographical areas fished, daylight only fisheries, changes to gillnet configurations and the length of sets. These programs will continue to be evaluated and implemented. Monitoring and compliance of the selective fishing practices is recognized as an essential component of the management of the Skeena gillnet fishery.

A report will be provided to the Certifier by March, 2010 describing selective fishing measures and outcomes.

Condition 35c cont'd

NCSA:

We see little to no conformity with, or direct addressing of, Condition 35C by either management agency (DFO) or the gillnet fishers. What proof or demonstration of commitment has DFO provided the public or the Certifier that anything has changed with regard to their commitment to implement such techniques? DFO allows non-selective gillnetting in the worst places at the worst times for steelhead thus showing absolutely no commitment to the Condition.

Moreover, on a higher level overview, what possible alterations to gillnet fishing can achieve scientifically proven increases in post-release survival anyway? It appears to us that more and more of the recent scientific literature on gillnets show increases in direct and delayed mortality impacts above what was previously thought. These studies, such as Schindler etc., do not provide any techniques that show increases in survival only that previously known impacts are actually higher than thought.

Furthermore, DFO's Action Plan statement on this Condition is completely generic in nature and avoids directly addressing the Condition. It is also inaccurate and sometimes misleading. For example, the watershed discussions referred to never occurred during the Skeena Watershed Initiative's tenure and now that that process is defunct it is unlikely that watershed wide discussions will take place any time soon as no plans are in place for a replacement public/stakeholder governance forum. DFO's other public input processes, by purposeful design, do not include the full spectrum of user groups in the watershed, thus narrowing the scope of input to mostly DFO 'friendly' groups. For example, the NCSA has no seat at the IHPC process, thus a very strong negative voice against DFO is edited out of so called public processes.

The DFO claim that extensive research has occurred over the last 15 years to evaluate selective harvest approaches is highly suspect and questionable. If research did take place it was likely focussed on Coho salmon, not steelhead, and whatever research occurred happened around the time of the so-called 'Coho crisis' of the late 1990's and early 2000's. No extensive research was ever undertaken directly on steelhead to our knowledge, with the 'steelhead barge' type experiment of the 1990's not exactly fitting the description of an actual selective fishing technique. For DFO to claim 'extensive' efforts in this area is completely disingenuous, especially given the lack of recent study or experiment directly related to steelhead.

The DFO claim of "…significant changes to commercial fishing seasons, geographical areas fished, daylight only fisheries, changes to gillnet configurations and the length of sets…" is completely undermined in the Report of the Skeena Independent Science Review Panel report, page 7: "*The whole notion that traditional gillnet fisheries can be made selective, and more broadly that captured fish can be released with high survival rates from any commercial fishing operation (seine, gillnet, beach seines) must be viewed with suspicion. The only really reliable 'selective fishing practices' are those that avoid capture of non-target species in the first place."* The list of DFO measures in the Action Plan thus appears to be 'window dressing' on a technique that cannot be made selective. And furthermore, the DFO statement "These programs will continue to be evaluated and implemented…" also appears weak and superfluous in light of the ISRP Panel Report quote above.

The last sentence in the DFO Action Plan is especially galling to anyone with a cursory knowledge of the historic poor gillnet fleet compliance. "…Monitoring and compliance of the selective fishing practices is recognized as an essential component of the management of the Skeena gillnet fishery…." With it being public knowledge there is little to no monitoring and that fleet compliance continues to be highly questionable, how does the DFO writer present this kind of statement with a straight face? It is completely absurd to state such a blatantly incongruity like this. If, as DFO states, monitoring and compliance are recognized as essential components of managing the Skeena gillnet fishery, then why isn't there much more of a focus on it by DFO? Why do both of these factors continue to be chronic problem areas for the Department if it's such a concern? Read any DFO Season Review or Conservation & Protection Unit annual report and it is abundantly clear that both monitoring and compliance are chronic problems yet little seems to be done about them. For further proof of generic poor compliance with commercial fishing, please note this bullet item "….C&P made it clear to industry that compliance this year (2011) was not acceptable. The RDG indicated support for improvements."**From DFO Catch Monitoring Worksop Oct.26-27 Minutes.

It also is readily apparent to our group that DFO has a much different definition regarding what exactly a 'clear commitment' is. For the public and stakeholders like our group, a clear commitment to "implement selective fishing and handling techniques that have been shown to increase the post-release survival of non-target species" would include measures such as; not fishing in historical high encounter/impact areas, such as River-Gap-Slough; revising the existing Allocation formula that commits to 75% of the sockeye catch being caught by non-selective gillnetters; and not forcing the gillnet fleet to be concentrated right in the river-mouth and approach areas. Until the public sees such examples of 'clear commitment' there is no expectation of DFO ever meeting Conditions like this.

Our conclusion on Condition 35C is that it appears there has been no move by DFO/industry to conform with the Condition at all.

Condition 35a:

Same as new condition 13a. Certification is conditional until the management agencies implement a scientifically defensible program for estimating steelhead catch in the Skeena sockeye fisheries, within two years

Action Plan Summary: DFO will develop a program for evaluating the impacts of the Skeena sockeye fisheries on steelhead. Fishery impacts on steelhead have been estimated using a model jointly created by DFO and B.C. Ministry of Environment (MOE), and reviewed by PSARC. The Skeena Independent Science Review commented on the model and expressed concern over the uncertainty in the model parameters. As recommended, DFO will work with MOE to review the utility of the model to estimate commercial harvest impacts.

A program to estimate steelhead escapement for the watershed and for major steelhead stocks was initiated by MOE in 2008, in cooperation with DFO. Part of this study is to evaluate components of this estimation procedure to inform a steelhead escapement program planned for 2009.

MOE is expected to take the lead in an evaluation of Steelhead stock status, with DFO providing support as required.

The MOE initiated pilot studies in 2008 to address Skeena steelhead stock status and escapement (MOE 2008). These studies included funding to: extend DFO's Skeena test fishery past its typical late August ending date; carry out steelhead bio-sampling from the post August test fishery for genetic analysis; conduct acoustic tagging to assess the suitability of acoustic telemetry to monitor the distribution of steelhead spawners within the Skeena River; and hire a full time steelhead management biologist for the Skeena Region Ministry office to assist with steelhead project management, quality control and delivery.

A catch monitoring framework will be developed by December 2010.

NCSA:

This Condition speaks to having scientifically defensible information on numbers of steelhead caught in Skeena fisheries within a 2 year timeframe. The DFO Action Plan response refers to the Skeena Management Model, a statistical technique used by DFO to derive impacts. The criticism of this Model by the ISRP is also mentioned by DFO but only in a casual way. In reality, the ISRP comments were much more strident *"…The model can give some 'worst case' guidance about maximum possible steelhead exploitation rates, but that is as far as it should be taken. Use of the model in recent years to give unrealistically precise estimates, and to compare those with some agreed upon maximum interception rates (like 24% in 2006), is scientifically indefensible, and creates a false sense of certainty that is inappropriate for all concerned…."* Why would DFO feel the need to review the utility of the model given this level of criticism by the ISRP? Furthermore, why would DFO need to tell the Certifier about this as part of their Action Plan? For all intents and purposes the use of the Model is dead, especially given the Province's dissatisfaction with it.

The rest of the DFO Action Plan again does not directly address the Condition. Instead, it diverges into estimating steelhead escapement studies and avoids speaking to estimating steelhead catch in commercial fisheries. The last sentence in the Action Plan states a catch monitoring framework will be in place by December 2010. Has this framework actually been written or implemented by DFO?

We would assert no movement towards addressing this Condition has been made by DFO.

Condition 35d:

Certification will be conditional until the management agency provides a research plan that addresses identified concerns related to the impact of the fishery on the ecosystem, with emphasis on non-target stocks (e.g. Skeena summer-run steelhead), and takes into consideration socioeconomic factors and anticipated changes to fisheries. This task should be completed by May 2012

Action Plan Summary: Same as 13a

NCSA:

To our knowledge there has been absolutely no movement towards fulfilling this Condition by DFO. No 'research plan' has been forthcoming, or made public, from DFO that addresses identified concerns related to the impact of the fishery on Skeena summer-run steelhead. The present mantra from DFO on this subject is that they feel there is no current conservation concern with Skeena steelhead and therefore they will not change their management approach until one is identified.

Furthermore, there is zero evidence in the public domain, or provided by DFO to those interested, that socio-economic factors regarding steelhead are taken into consideration at all in the planning and prosecution of commercial fisheries on the north coast. The Department may occasionally claim to consider these factors, in documents such as the IFMP, but there is no direct mention or explicit public examination of comparative values derived for society between gillnetting and Skeena steelhead to be found.

The Department has had since 2008 to study and examine the economic assessment done by Blewett of Counterpoint Consulting, entitled 'Economic Dimensions of Skeena Watershed Salmonid Fisheries'. Yet, the public cannot find any quote or reference to this study by DFO staff in any IFMP or fisheries planning documents. The Blewett Report clearly presents the economic picture that, at least in the years studied, the sport and recreational fishery out-contributed the commercial fishery by a factor of 3 to 1 or $52.8 million in economic impacts for Sport versus only $15.2 for commercial (page iii).(Please find a digital copy of this document also attached to our NCSA submission.) With such a large discrepancy in contributions to the regional economies, one would think it would warrant an occasional mention by DFO in some of their documentation, but such is not the case and this fact really begs the question: why not? Bias towards industry has long been levelled at DFO and it seems a logical conclusion given these types of facts.

It is now May 2012, and unless there is a secretly published 'research plan' or one that DFO is ready to divulge to the public over the coming weeks, we feel DFO is out of compliance and has not made any attempt to address this Condition. The failure of the management agency to adhere to the prescribed timetables in the Conditions and their own Action Plan is of serious concern to us vis-à-vis the credibility of the entire process.

Condition 36b:

Certification will be conditional until there is a clear commitment from the management agency and fishers to identify and implement selective fishing techniques that are consistent with the goal of reducing the catch of non-target species, especially steelhead. These tasks should be completed within two years

Action Plan Summary: There has been extensive research over the last 15 years to evaluate selective harvest approaches. Many of these have been implemented, resulting in very significant changes to commercial fishing seasons, geographical areas fished, daylight only fisheries, changes to gillnet configurations and the length of sets. These programs will continue to be evaluated and implemented. Monitoring and compliance of the selective fishing practices is recognized as an essential component of the management of the Skeena gillnet fishery.

A report will be provided to the Certifier by December, 2010 describing selective fishing measures and outcomes.

NCSA:

In our opinion, and our experience with dealing with DFO over the last couple of years, we can see no clear commitment from the management agency or fishers to identify or implement techniques that are consistent with the goal of reducing the catch of non-target species, like steelhead.

Although we speak mostly about the negative impacts of gillnetting the seine fleet is also a major concern regarding steelhead encounters. Our concern centers on the 6 day, 24 hour per day, extended seine ITQ openings. Ostensibly, these extended openings are to provide more time for fishers to handle the catch and by-catch with greater care. However, we see the double edged sword of much greater steelhead encounters due to the extended openings being 24 hours per day and up to 6 days straight. This type of extended opening gives no window of free movement opportunity to non-target fish thus increasing steelhead encounter rates and worse still, they are sometimes coupled with gillnet openings so that the two gear type openings run concurrently. What chance does this provide migrating fish of escaping encounters with a net? Or what about recaptures on already weakened released fish?

Furthermore, why does the management agency continue to facilitate openings in the worst times and places for steelhead encounters if the goal is to reduce the catch of non-target species like steelhead? Places such as Sub-Areas 4-12 and 4-15, the River-Gap-Slough are well known, historical high steelhead

encounter commercial fishing areas yet they are never closed to fishing, especially during the high steelhead migration times.

Where is the practical application of 'common sense' that having hundreds of gillnetters and dozens of high capacity seiners stuffed into the relatively small approach waters is not good recipe for avoiding non-target fish? How does this type of management approach work to lessen the catch of non-target species like steelhead?

We feel there is no evidence to show or reflect that there is a "…clear commitment from the management agency and fishers to identify and implement selective fishing techniques that are consistent with the goal of reducing the catch of non-target species, especially steelhead." Therefore we feel the Condition has not been met or even begun to be addressed.

Condition 36c:

Certification will be conditional until there is a clear commitment from the fishers participating in Skeena sockeye fisheries to provide sufficient information for managers to derive reliable estimates of the catch and discards of steelhead and other non-target species, within two years

Action Plan Summary: DFO will develop a program for monitoring the by-catch in Skeena sockeye fisheries including steelhead. Fishery impacts on steelhead have been estimated using a model jointly created by DFO and MOE, and reviewed by PSARC. The Skeena Independent Science Review commented on the model and expressed concern over the uncertainty in the model parameters. As recommended, DFO will work with MOE to review the utility of the model to estimate commercial harvest impacts.

A catch monitoring framework will be developed by December, 2011.

NCSA:

In 2010 and 2011, DFO commissioned Observers to monitor the commercial fishing activity in Areas 3 and 4. Understanding steelhead by-catch was to be one aspect of these studies. Unfortunately, the Department has withheld this information from the public. Our group had to resort to using the Access to Information process to try and acquire unedited data. As of this date, May 12th, we still have not received any information on the 2011 Observer program even though we requested it many months ago via normal office channels and then through the ATIP process.

Why DFO is withholding this data from the public is a mystery to us and reflects poorly upon the Department's judgement. From your Certification process Audit perspective, how is the public supposed to properly participate in your process if we are not informed with the most up to date information from the management agency? Why would DFO withhold information from the public if they are truly committed to addressing all these various Conditions the Certifier has placed on the fishery?

This is only one instance of information being withheld by DFO North Coast. Our group has also had an inquiry into fisher compliance from 2011 that has gone unnoticed. Obviously, it is a pattern of behaviour to deny the public access to information that DFO feels is harmful to their management agenda. The Department's sometimes obtuse statements in their Action Plan are also a reflection of their arrogance that no one, especially the public, will tell them how to manage this fishery. The Department is dismissive towards the public, stakeholders, and the MSC process.

In previous examinations of Observer data, such as the J.O.Thomas study, the disparity between commercial fisher hail counts and the 'real' counts observed has been well documented. There has been no change made public to suggest this situation has been rectified or changed in any way. We would assume the 2011 Ecotrust Observer data would also reflect this disparity as it is a longstanding historical issue that fishermen do not tell the truth about by-catch, especially steelhead.

More telling observations on the utility of observers in fisheries is found in the Minutes of the Oct.26-27 DFO Catch Monitoring Workshop, several examples, include statements such as; "*Observing 5 boats out of 100 will give very broad imprecision rates because fisher behaviour changes with on-board observers"*; "*Demos this year showed that observed catch was not representative".* On current monitoring programs for the NC seine fishery; "*…Discards: Current programs don't provide adequate information." " Very limited observers in A and B; behaviour changes when observers are present." "…DFO: We have an imperfect system on the NC; we would like to improve it…."*

Again, no visible action has been taken by the management agency within the 2 year timeframe outlined. Therefore, DFO has not conformed to the Condition in any way.

General Comments on Compliance:

In a document only brought to our attention last week, we see DFO North Coast attempting to show management action and fleet behaviour in fulfilling the Conditions 35C and 36B. Without this document being brought to our attention there is no way our group would have seen this document and this secrecy on behalf of DFO in dealing with the Certifiers is a major concern to us. As a stakeholder we did not receive notification of this DFO submission and do not have the time or inclination to delve into the morass of the MSC website searching for quietly submitted documents.

Furthermore, the DFO document quotes data from the Ecotrust 2011 Observer Report which our group has been trying to access for months even having to resort to the federal government's Access To Information process when our requests for the information was denied. This type of behaviour by DFO North Coast to deny stakeholders access to basic fishery information is disconcerting to the public and should be to the Certifier's also. How are stakeholders or the public supposed to fairly examine fishery management if the latest information is being withheld from them? More galling is the fact that industry probably had access to the data and Report as soon as it was written via the North Coast DFO office industry friendly staff.

The DFO document is of concern to our group because of its lengthy and obvious attempts to describe the commercial fleet as being in compliance with the regulations of the sockeye fishery when nothing could be further from the truth. (See quotes above from DFO Workshop Minutes)

This DFO NC document on addressing Conditions 35C and 36B is seriously flawed in our opinion. For example, on pages 2-5 there are listings of the 'extensive' management measures related to the gillnetters Condition of Licence, the IFMP, and Fishery Notices for the 2011 season. However, as we've previously quoted for Condition 35C above, the ISRP Report strongly dismisses all these measures on page 7: "The whole notion that traditional gillnet fisheries can be made selective, and more broadly that captured fish can be released with high survival rates from any commercial fishing operation (seine, gillnet, beach seines) must be viewed with suspicion. The only really reliable 'selective fishing practices' are those that avoid capture of non-target species in the first place."

The ISRP Report was published in 2008 so why is DFO North Coast still pushing these measures as having some utility? Moreover, why do Conditions request something that is unattainable for this technique and gear type? The list of DFO measures on the Condition of Licence thus appears to be 'window dressing' on a technique that simply cannot be made truly selective. DFO even have the gall to title the August gillnet fishery 'the Skeena River Selective Gillnet Fishery' as if this somehow lends credibility to the proven non-selective technique.

Further evidence of DFO not subscribing to, or willfully ignoring, the ISRP statement on gillnetting is found in this paragraph on page 6:

The fishing area for the August Skeena River Selective Gillnet Fishery was significantly reduced by excluding sub-areas 4-4, 4-5, 4-8, 5-2, 5-3, 5-10, and 5-13 from the August openings. The purpose was to concentrate the fleet and allow better monitoring by C&P, charter patrol and Ecotrust Canada observer staff.

So, if the ISRP panel of esteemed fisheries scientists think that 'avoidance' is the primary selective tool available to managers, how does the 'management technique' of concentrating the entire gillnet fleet into the Skeena river approach areas reflect addressing the Condition of reducing the by-catch of steelhead? How does concentrating the whole gillnet fleet in the worst possible area at the worst possible time for by-catch and encounters relate to reducing steelhead by-catch or encounter rates?

Moreover, DFO kindly provides another hint at not caring about the actual by-catch problem by stating this technique of concentrating the gillnet fleet is to allow for better monitoring. This is an amazing admission from DFO that the actual by-catch and killing of valuable steelhead isn't a concern to them only that the gillnet fleet be more accessible to their thinly spread enforcement and monitoring programs. And even more concerning is the minuscule coverage provided by these programs even with the assistance of concentrating the fleet.

It appears the first 10 pages of this document are filler aimed at giving the reader the impression extensive management measures by DFO are in place on the gillnet and seine sockeye fisheries. It is not

until page 11 that the Compliance of these fleets with those measures is discussed and this is where the prevarication begins. One immediately notices the attempt to downplay gillnet effort by focussing on the 5 gillnet openings in Area 4 during August, 2011. No mention is made of the other 4 gillnet openings in Area 4 or the additional 10 gillnet openings in Area 3 in 2011. There were 18 gillnet openings in Areas 3 and 4 in 2011.

The main criticism of this paper we have is DFO trying to present the idea that enforcement and monitoring of the fleet is widespread and effective. A quick review of Table 1 on page 11 would refute this claim by noting the small numbers of boats checked against the large numbers of boats participating in the opening. For example, on August 4th 5 boats were checked out of 214. On August 15th, 6 boats were checked out of 91. Worse yet, on Aug.07th the patrol boat broke down and zero boats out of 175 were checked.

Not only is enforcement coverage very limited but the observed number of sets by gillnetters is miniscule when reviewed against the fleet for the day. The low numbers of boats observed and sets by those boats observed hardly gives an accurate statistical picture of what is happening over the whole fleet on any given day.

Moreover, a review of the compliance disparity between the use of a marked patrol vessel versus an unmarked vessel is also telling. Not surprisingly, fisher compliance rates drop significantly when the unmarked patrol vessel is used.

The C&P coverage of the seine fleet is even worse in Table 6; on Aug.5010, 1 boat out of 61 checked for brailing and 6 boats out of 61 checked for revival box. More telling on the Aug.13-14 opening 3 out of 23 boats checked and all 3 had species violations for 100% out of compliance.

The paper also reports more violations by gillnetters were noted but since these weren't for selective measures, they didn't think them worthy of inclusion. Downplaying of non-compliance by fishers is a regular DFO habit it seems in this paper.

As for the Ecotrust observer data, again the coverage is so limited as to be a poor basis for a true reflection of what is occurring on the water. Ecotrust fish handling data is very subjective and of limited use. The limitations of observers are well documented and even mentioned by the writer in the preamble; these being observers intimidated by fishers; observers knowing or even related to fishermen, which is possible in small coastal communities, thus further skewing observations.

Gillnetter behaviour is questioned in the preamble again when the writer notes 3 gillnet vessels refused to accept an observer. This, as noted by the DFO writer, is a Condition of Licence yet there is no mention of any penalty or consequences for the fishers for their refusal to accommodate an observer.

In a similar vein, the NCSA noticed on the first seine opening in 2011 that the Ecotrust observers reported several Condition of Licence infractions on the seine boat they were on in Area 3. Yet, after several inquiries to the NC Area Director and to a Fishery Officer Lewis in Terrace, who was on patrol that day, we have not received any follow up information as to whether any charges or warnings came

of this incident. Does this reflect the 'true' nature of DFO's enforcement program in that infractions of Condition of Licence are only to be noted and not charged in any formal manner?

NCSA had a telephone discussion with the aforementioned Fishery Officer Lewis earlier this year where the officer reinforced the premise that their patrols are quite limited. One reason he gave was that in general the first few boats they check invariably do have infractions and that the processing of these basically used up significant amounts of the patrol day. This is important to consider in light of the limited number of patrols sent out by DFO C&P. For further corroboration, please look at the Enforcement Review at this page: http://www.pac.dfo-mpo.gc.ca/northcoast/post-seasonreview/default.htm

The officer also presented the opinion that in his experience observers are easily intimidated by the boat owners and adjust their behaviour accordingly thus possibly skewing observations.

Another example of anecdotal evidence of poor fisher compliance is provided in information from fisherman Mr. Fred Hawkshaw. Mr. Hawkshaw regularly states being the only fisher in his area to be following the selective measure of the short timed net set. Mr. Hawkshaw relates it is common for other fishermen in his vicinity to leave their net in the water for an hour or more over the slack tide period.

To review, we find this DFO submission on compliance and monitoring to be completely lacking in veracity. The paper presents a great quantity of information that can only be meant to distract or mislead the reader into thinking a lot is being done to address non-compliance and that DFO monitoring is adequate when nothing could be further from the truth.

Appendix A – Written Submissions

Watershed Watch Salmon Society Submission

Watershed Watch Salmon Society
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Watershed Watch SALMON SOCIETY
Watching out for BC's Wild Salmon

May 28, 2012

Steven Devitt
Intertek Moody Marine
Sent via email to steven.devitt@intertek.com

Dear Steve and other members of the Assessment Team:

RE: Comments for 2012 audit of Fraser sockeye MSC certification

This submission presents information to the assessment team on changes to the scientific base of information for management of the Fraser River sockeye salmon fishery. The assessment team's mandate to consider the following information is explained in the submission made by the Pacific Salmon Foundation for the 2012 audit. Furthermore, Watershed Watch Salmon Society fully endorses the entire PSF submission. In addition to the arguments and evidence put forward by PSF, we offer here an additional analysis for your consideration, focused on Indicators 1.1.3.2, 1.2.1, 1.2.2 and, 2.3.1 and their respective Conditions 6, 7, 8, and 19. The analysis was prepared by Raincoast Conservation Foundation and is meant to illustrate the link between management objectives and stock status, based on biological reference points. It shows that recent post-certification management of the fishery has resulted in excessive exploitation rates on multiple target and non-target stocks below their Limit Reference Points (LRPs) and Target Reference Points (TRPs).

The data used for this analysis were taken from Grant et al. (2011), and are presented in a manner after that in Rose and Cowan (2003). The analysis uses 5 parameters (described below) to complete the 2 figures below. Some of the data used are presented numerically in Grant et al. (2011) (Smsy, Sgen1, current generation geometric mean effective total spawners-ETS), and some needed to be digitized from the figures in Appendix 3 of Grant et al. (2011): Historical trends and results of stock assessments (maximum harvest rate at Smsy – Uopt, current generation exploitation rate).

1. Smsy – calculated from the given 80% Smsy in Figure 2e for each assessable CU.
2. Sgen1 – given in Figure 2e (Grant et al. 2011) for each CU.
3. Current Generation (2006-9) ETS – given as geometric or arithmetic mean in Table 4. Geometric mean was favoured as per the PSARC review process for this paper, although there was some question on applicability of benchmarks and means to cyclic stocks.
4. Uopt – digitized from Figure 2e as follows:
    a. Graphs were imported into a digitizing program to transpose figures into numerical values.
    b. 100% Smsy was calculated and a line was added to the graph at Spawners=Smsy.
    c. The value for Recruits (Rmsy) at that point was then taken from the S-R fit line.

d. Uopt was calculated as Rmsy-Smsy / Rmsy (essentially the distance from the replacement line – not shown on Figure 2e – to the S-R fit line divided by Rmsy).

5. Current generation exploitation rate (exploitation rate for each year (2006-9)) was digitized using the same graph digitizing software from using point data from Figure 1a in Grant et al (2011) for each CU. The average of the 4 years was then calculated.

The upper benchmark recommended by Holt (2009), and used in Grant et al. (2011) and in Rose and Cowan (2003) is 80% Smsy. The lower benchmark recommended by Holt (2009) and used by Korman (2012) for Skeena River sockeye and Grant et al. (2011) for Fraser River sockeye is Sgen1 (the spawner abundance that would theoretically result in recovery to maximum sustainable yield (Smsy) in one generation).

The analysis produced the two figures below, using the x-axis as a proxy for stock status versus the y-axis as an indicator of recent fishing pressure. Appropriate exploitation rates decline as stock status declines.

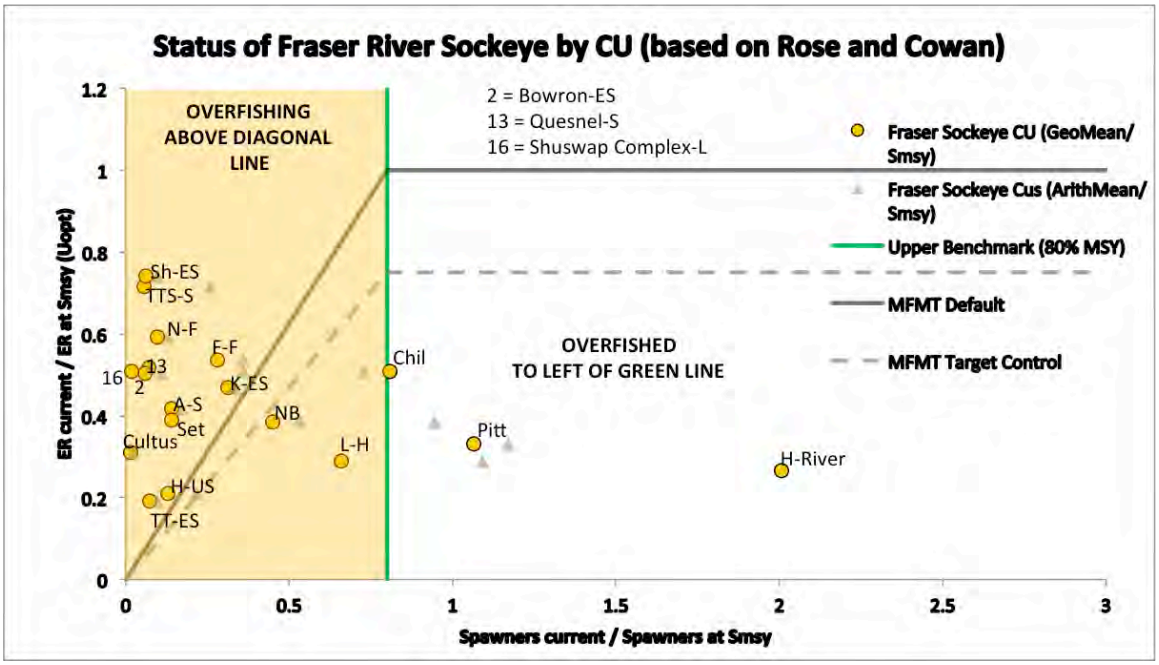

Figure 1: Current fisheries management status of Fraser River sockeye salmon conservation units as defined by Grant et al. (2011), in relation to upper benchmarks, using methodology of Rose and Cowan (2003). The x-axis is the ratio of the current generation Effective Total Spawners (ETS) to Smsy and is a proxy for stock status. The MSST (minimum sustained stock size threshold) is represented by the green line at 0.8 on the x-axis. Stocks to the left of the green line (in the amber shading) are considered overfished – the stock status is below the upper benchmark of 80% Smsy. The y-axis indicates fishing pressure as the ratio of the current generation exploitation rate to Uopt (maximum harvest at Smsy). If a stock is at or above MSST, then it would be experiencing overfishing above 1 on the y-axis (greater exploitation rate than the maximum at Smsy). The solid grey line, MFMT (maximum fishing mortality rate threshold) is the default control rule. The diagonal portion of the line below MSST is reflective of the link between stock status and appropriate fishing mortality. That is, as stocks status decreases

relative to Smsy, exploitation rate must be decreased as well to prevent overfishing. Stocks above or to the left of MFMT are considered to be experiencing overfishing. The dotted grey line represents the target MFMT rule, and is designed to be conservative (intersects MSST at 75% of Uopt) taking into account the risk of exceeding the MFMT default control rule and also that optimum yield will be less than MSY. (After Rose and Cowan 2003, Figure 1).

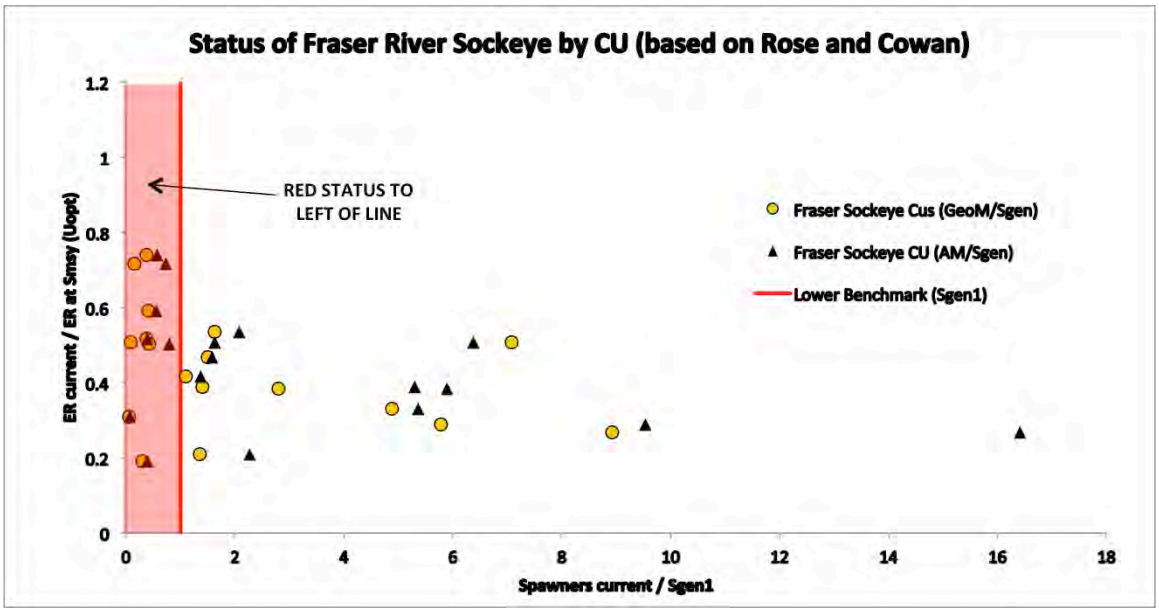

Figure 2: Current fisheries management status of Fraser River sockeye salmon conservation units as defined by Grant et al. (2011), in relation to lower benchmarks (Sgen1), using methodology of Rose and Cowan (2003). The x-axis is the ratio of the current generation Effective Total Spawners (ETS) to Sgen1 and indicates stock status relative to the lower benchmark (Sgen1). Stocks to the left of the red line (in the red shading) are below the lower benchmark. The y-axis indicates fishing pressure as the ratio of the current generation exploitation rate to Uopt (maximum harvest at Smsy). (After Korman 2012, Figure 12).

The above analysis supports the evidence and arguments put forward by the Pacific Salmon Foundation that Conditions 6, 7, 8 and 19 have not been met and that aggregate-based management of Fraser sockeye fisheries in recent years has resulted in the routine exploitation, and impaired the rebuilding, of individual target and non-target stocks (conservation units) that are below their Target and Limit Reference Points.

Thank you for considering this information, and please feel free to contact me with any questions.

Sincerely,

Aaron Hill

Aaron Hill, M.Sc.
Ecologist

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Appendix B – Stakeholder Presentations

Pacific Salmon Foundation
Upper Fraser Fisheries Conservation Alliance
Skeena Wild Conservation Trust
Secwepemc Fisheries Commission