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PACIFIC SALMON OUTLOOK
PACIFIC REGION
2010

Canada

2010 SALMON STOCK OUTLOOK

Since 2002, Pacific & Yukon Region, Stock Assessment staff have provided a categorical outlook for the next year's salmon status. The Outlook is intended to provide an objective and consistent context within which to initiate fisheries planning. In particular, it provides a preliminary indication of salmon production and associated fishing opportunities by geographic area and species (a stock group).

For each stock group, a status outlook is provided on a categorical scale of 1 to 4 (table below). The category reflects the current interpretation of available quantitative and qualitative information, including pre-season forecasts if available, and the opinion of DFO Area stock assessment staff. Where management targets for stocks have not been formally described, interim targets were either based on historical return levels or, if necessary, opinion of local staff. The Department is currently proceeding on defining methods to determine of benchmarks of status under the Wild Salmon Policy and will be consulting on these over the next year.

Status categories may have consequences to fisheries where a stock group is caught directly or incidentally. In the context of this outlook the probable fishery consequences associated with each of the four status categories are identified in the table. Stock groups forecast in category "2" are considered "sensitive" and fisheries should be planned to reduce impacts on these groups.

Status Category	Category Definition	Criteria	Fishery Consequences
1	Stock of concern	Stock is (or is forecast to be) less than 25% of target or is declining rapidly.	Directed fisheries are unlikely and there may be a requirement to avoid indirect catch of the stock.
2	Low	Stock is (or is forecast to be) well below target or below target and declining.	Directed fisheries are uncertain and likely to be small if permitted. Allocation policy will determine harvest opportunities.
3	Near Target	Stock is (or is forecast to be) within 25% of target and stable or increasing.	Directed fisheries subject to allocation policy.
4	Abundant	Stock is (or is forecast to be) well above target.	Directed fisheries subject to allocation policy.
ND	No Data	Insufficient data to determine outlook category.	

It is important to note that the fishery consequences implied by any of the status categories do not include interactions with other stocks. Consequently, conservation requirements for stocks in status categories 1 and 2 may limit fishing opportunities for stock groups for which there are no concerns. Where possible the comments associated with each stock identify such potential constraints. A range of status categories indicates significant geographic variation in status within the stock group and fisheries may be shaped in response to that variation.

This 2010 outlook should be regarded as an early scan of salmon production, as very preliminary information, and is subject to change as more information becomes available. The outlook will be periodically up-dated as statistical forecasts and assessments are completed and reviewed.

Summary of Pacific Salmon Species/Stock groups for 2010

A total of **93** species/stock groups were considered and status categorized for **88**, five were data deficient (ND), and one pink group was not applicable (NA). Twenty-nine (**29**) stock groups are likely to be at or above target abundance (category 3, 4, 3/4), while **34** are expected to be of some conservation concern (category 1, 2, 1/2). The remaining **18** stock groups had mixed status levels (1/4, 2/3, 2/4). Overall, the outlook for 2010 is less positive relative to 2009: 12 stock groups improved in status (many within the Fraser sockeye stocks, plus Fraser River chum salmon), while 18 declined in status (mostly sockeye and Chinook in the South Coast and in the Transboundary and Yukon Areas). Please note that assessments for southern BC chum and forecasts for coho salmon, and some Fall-run Chinook, are incomplete at this time and these data will be revised later.

Species/Stock	2010 Outlook status	Comments
Sockeye		
1. Okanagan	3	Brood year contained 20,819 adults (AUC in terminal area). Returns per spawner in recent years have been on the order of 2 so simple prediction is 40,000 in terminal AUC units (or 66,000 adults through Wells in 2010). An alternate estimate is to apply a "high average" marine survival of 5 % to an estimated 1.79 million smolts equates to 54,000 in terminal area AUC (or 90,000 adults at Wells). Skaha hatchery origin fish have been contributing an additional 10-20 % to returns so all values should be increased to account for enhanced component. Total outlook is for 79,200 to 108,000 (fish passing through Wells Dam) or 48,000-64,800 (as terminal escapement). Expectations are for sufficient returns to sustain both catch and escapement. *(2009 outlook was 3)*
Fraser Sockeye	**Overview**	Forecasts for 2010 assume that productivity observed in the recent time period (1996-2003 brood years) will persist through to 2010. Currently, however, without effective leading indicators for Fraser Sockeye productivity it is possible that returns in 2010 may have experienced either average productivity or alternatively extremely low productivity (e.g. 2009 returns).
2. Early Stuart	1	Below average returns are expected in 2010 relative to the cycle average of 113,000 (brood years: 1980-2006). Although the 2006 brood year escapement (15,900 effective female spawners (EFS)) for this stock was similar to its cycle average, productivity (recruits-per-effective female spawner) has been particularly low in recent years. *(2009 outlook status was 2).*
3. Early Summer – North Thompson	3	**Raft:** Above average returns are expected in 2010 relative to the cycle average of 16,000. The 2006 brood year escapement for Raft (3,400 EFS) was similar to the cycle average and productivity has been low in recent years. **Fennell:** Above average returns are expected for 2010 relative to the cycle average of 26,000. The 2006 brood year escapement for Fennell (8,000) was double the cycle average and productivity has been average in recent years. *(2009 outlook status was 3/4).*
4. Early Summer South Thompson	3	**Scotch:** The 2010 return year is the dominant return year for Scotch and returns are expected to be above the cycle average of 248,000. The 2006 brood year escapement for Scotch (73,000 EFS) was greater than the cycle average and productivity has been relatively stable in recent years. **Seymour:** Below average returns are expected in 2010 relative to the cycle average

Species/Stock	2010 Outlook status	Comments
		of 393,000. The 2006 brood year escapement for Seymour (57,000 EFS) was similar to the cycle average and productivity has been low in recent years. *(2009 outlook status was 2).*
5. Early Summer – Mid/Upper Fraser	2	**Gates:** Below average returns are expected in 2010 relative to the cycle average of 17,000. The 2006 brood year escapement for Gates (1,500 EFS) was similar to the cycle average (1,800) and productivity has been low in recent years. **Nadina:** Average returns are expected in 2010 relative to the cycle average of 22,000. The 2006 brood year escapement for Nadina (4,500 EFS) was above the cycle average and productivity has been low in recent years. **Bowron:** Below average returns are expected in 2010 relative to the cycle average of 20,000. The 2006 brood year escapement for Bowron (600 EFS) was below the cycle average and productivity has been particularly low in recent years. *(2009 outlook status was 2).*
6. Early Summer – Lower Fraser	3	**Pitt:** Below average returns are expected in 2010 relative to the average of 60,000. The brood year escapement for Pitt age-5 (33,000) and age-4 (20,000) are respectively above and similar to average escapement; Pitt has a greater proportion of age-5 recruits (~70%) relative to age-4 recruit. Productivity has been low in recent years. *(2009 outlook status was 3).*
7. Summer – Chilko	4	Average returns are expected in 2010 relative to the cycle average of 1,900,000. Although juvenile production was exceptionally high in the brood year (71 million smolts), marine survival has been particularly low in recent years. *(2009 outlook status was 4).*
8. Summer – Late Stuart	2	Below average returns are expected in 2010 relative to the cycle average of 396,000. The 2006 brood year escapement for Late Stuart (14,000 EFS) was below the cycle average and productivity has been particularly low in recent years. *(2009 outlook status was 2/3).*
9. Summer – Nechako	3	Below average returns are expected in 2010 relative to the cycle average of 563,000. Although the 2006 brood year escapement for Stellako (80,000 EFS) was similar to the cycle average, productivity has been low in recent years. *(2009 outlook status was 3).*
10. Summer – Quesnel	3	Below average returns are expected in 2010 relative to the cycle average of 2.2 million. The 2006 brood year escapement for Quesnel (90,000 EFS) was below the cycle average and productivity has been low in recent years. *(2009 outlook status was 3/4).*
11. Fall – Cultus	1/2	Average returns are expected in 2010 relative to the cycle average of 18,000. Although juvenile production (both wild and hatchery supplementation) of 400,000 smolts was above the cycle average, productivity has been low in recent years. *(2009 outlook status was 1).*
12. Fall – Portage	3	Average returns are expected in 2010 relative to the cycle average of 90,000. Although the 2006 brood year escapement for Portage (11,000 EFS) was greater than the cycle average, productivity has been low in recent years. *(2009 outlook status was 2/3).*
13. Fall – South Thompson	4	The 2010 return year is the dominant return year for Late Shuswap and returns are expected to be average relative to the cycle average of 5,439,000. The 2006 brood year escapement for Late Shuswap (1.2 M EFS) was similar to the cycle average (1.4 M EFS). Productivity for this cycle has been average in recent years. *(2009 outlook status was 2).*
14. Fall – Birkenhead	3	Below average returns are expected in 2010 relative to the cycle average of 688,000. Although the 2006 brood year escapement for Birkenhead (140,000 EFS) was similar to the cycle average, productivity has been low in recent years. *(2009 outlook status was 3).*

Species/Stock	2010 Outlook status	Comments
15. Fall – Lower Fraser	3	**Weaver (including miscellaneous Harrison Lake-rearing stocks)**: Below average returns are expected in 2010 relative to the cycle average of 690,000. The 2006 brood year escapement for Weaver (14,000 EFS) was less than the cycle average and recent productivity has been average. **Harrison**: Above average returns are expected in 2010 relative to the cycle average of 58,000. Escapement for Harrison was 91,000 in the 2006 brood year (age-4 recruits in 2010) and 57,000 in the 2007 brood year (age-3 recruits in 2010). Productivity for Harrison has increased in recent years. *(2009 outlook status was 4).*
16. Somass	3	Expectations for 2010 are for returns at similar levels to 2009 – i.e. lower than average, but above minimal levels required to support fisheries. Expectations for Sproat Lake are lower than Great Central sockeye due to relatively lower spawner abundances in the 2005 brood year there. However, the observed returns in 2009 from this brood year were higher than expected. (2009Outlook Status was 2)
17. Henderson	2	There were low numbers of spawners in both brood years (2005, 2006) that will contribute to the 2010 return. However, in each of the last three years escapement to Henderson has been higher than expected off low brood years, perhaps as a result of hatchery supplementation and decent marine survival rates. (2009 Outlook Status was 2)
18. WCVI-Other	1/ 2	Assessment data are not available to forecast others systems. However, Hobiton, Kennedy and Jantzen Lake stocks are depressed. (2009 Outlook Status was 1/2)
19. Area 11-13	1 / 2	For many of the small Johnstone Strait stocks in 2009, assessment data are sparse, but most systems surveyed appear to be low and stable (Quatse River) or low and improving, such as Heydon Creek (3 times the brood return). Preliminary review of Nimpkish sockeye returns indicate lower abundance than the recent 10 year average and lower than half the long term average escapement to that system. Nimpkish in 2010 will likely contribute another low but stable return based on the low 2005 and 2006 parental brood years. Indication of improved marine survival of coho and pink returns from 2009 (similar out migration years as the main sockeye components), may also equate to improved sockeye survival for the return in 2010. 2010 expectations are for low and stable abundances with some stocks of concern. There is no change in the outlook status from 2009 to 2010.
20. Sakinaw	1	One female sockeye, of hatchery origin, was enumerated on 23-Aug-2009. The 2007 smolt production which should have been the main component of this years' return was approximately 4,000. The 2008 smolt production which will be the main component of next years return was estimated at 12,000. This is the fourth year of zero or one escapement count. This stock essentially exists at Rosewall and Ouilette Hatcheries (captive brood). *(2009 Outlook status: 1)*
21. Area 7-10	1 / 2	Returns are expected to be very low. Area 9 and 10 returns are just replacing brood year abundance under conditions of near zero exploitation. The 2009 returns are coming off weak brood years from 2005 and 2006. Sockeye returns to Areas 7 and 8 in general continue to be depressed. Atnarko sockeye have declined from long term escapements of 20-40,000 until 2004 down to very low levels the last three years. *(2009 Outlook status: 1/2)*
22. Coastal 3/6	2 / 4	Status is uncertain. Very limited assessment data for evaluation. *(2009 Outlook status: 2/4).*
23. Babine Lake Enhanced	3	Very low abundance forecast for age-4 fish based on 2009 jack returns. Very poor age-5 return expected based on very poor age-4 returns in 2009. *(2009 Outlook status: 3)*
24. Skeena Wild	1 / 4	All Babine wild escapements have declined sharply in recent years. Non-Babine sockeye status continues to be variable. Generally expect poor survival for sockeye

Species/Stock	2010 Outlook status	Comments
		that went to sea in 2007 (returning as 5 year olds this year) and the survival for sockeye that went to sea in 2008 (returning as 4 year olds this year) is very uncertain. Babine jack returns were very poor while a number of wild sockeye stocks had relatively high jack abundance. *(2009 Outlook status: 1/4)*
25. Nass	2 / 4	Below average returns are expected. Concern for stock status of some non-Meziadin sockeye. *(2009 Outlook status: 2/4).*
26. QCI	2 / 4	Status uncertain for some systems, limited assessment work. *(2009 Outlook status: 2/4).*
27. Alsek	2	Based on brood year escapements (which were less than half of the lower end of the goal range) and the historical stock-recruitment relationship, a well below average run is expected. Recently, both early and late runs have been well below expectations (record low in 2008) and survivals appear to have been low. Hence, the outlook has been downgraded to a 2 for 2010. *(2009 Outlook Status was 2/3)*
28. Stikine-wild	3	Stikine sockeye production has varied widely since 1985. Low production periods occurred in the mid 1980(s) to early 1990(s). From 2003 through 2006 production improved, believed to be due to improved marine survival. However, runs in 2007-09 were below forecast suggesting a downturn in marine survival. For 2010, the Tahltan Lake component is predicted to be below average due to the below average number of smolts which emigrated from the lake in 2007. Based on the poor marine survival of this stock since 2007, which may be indicating a downward trend, the 2010 return may not as high as traditional forecast models would predict. The mainstem component is expected to be above average. Again, as with the Tahltan component, it appears that marine survival of this stock grouping has seen a downward trend since 2007. As a result, the 2010 return may not meet pre season expectations of traditional forecast models; however, fishing opportunities are expected within the confines of conservation and PST harvest sharing arrangements *(2009 Outlook Status was 3)*
29. Taku-Wild	3	Although the principle brood year escapement was high, production is expected to be below average based on preliminary stock-recruitment analysis. Fishing opportunities are expected within the confines of conservation and PST harvest sharing arrangements. Special measures may be needed to achieve the egg-take goal for Tatsamenie enhancement. (2009 Outlook Status was 3)
Chinook		
30. Early spring – upper & mid-Fraser, North Thompson	1	Continued poor marine survival has resulted in continued poor to very poor escapements. 2009 was the third successive year where total recruitment has failed to replace parental spawning abundance. Populations of concern are upper and lower Chilcotin, Westroad, Cottonwood, and Chilako rivers. There is no exploitation rate indicator stock for this group. *(2009 Outlook status: 1)*
31.Late summer – South Thompson	3/4	Aggregate escapements in 2009 were on average, similar to brood year escapements (2005). Large numbers of 3-yr olds were observed in these systems, also indicating the likelihood of good returns in 2010. South Thompson (46,000), was well under the parent escapement, but others such as Adams (6,400) and Lower Shuswap (25,000) were greater than the brood year levels. Indicator stock is Lower Shuswap *(2009 Outlook status: 3)*
32. Spring – upper & mid-Fraser, North Thompson	1	Continued poor marine survival has resulted in continued poor to very poor escapements. 2009 was the third successive year where total recruitment failed to replace parental spawning abundance. There is no exploitation rate indicator stock for this group. *(2009 Outlook status: 1)*

Species/Stock	2010 Outlook status	Comments
33. Summer – upper & mid-Fraser, North Thompson	1	Continued poor marine survival has resulted in continued poor to very poor escapements. 2009 was the third successive year where total recruitment failed to replace parental spawning abundance. There is no exploitation rate indicator stock for this group. *(2009 Outlook status: 1)*
34. Spring – lower Thompson	1	Extremely poor escapements in 2009. Record lows at Nicola (440), Coldwater (26) and Louis (10). 2009 was the fourth successive year where recruitment failed to replace parental spawning abundance. Exploitation rate indicator for this group is Nicola River. *(2009 Outlook status: 1)*
35. Fall – lower Fraser natural	2	Four year old returns expected to be weak in 2010, as indicated by the lack of three year old returns at Harrison in 2009. Jack numbers appear strong which is encouraging for 2010 and 2011. 2009 adult escapement work at Harrison is underway, with preliminary escapement estimates expected in January. Formal forecast will be available in mid March. *(2009 Outlook status: 2)*
36. Fall – lower Fraser hatchery	2	Although there are significant hatchery releases of Harrison fall-run chinook stock into the Harrison & Stave Rivers, lower Fraser River fall-run hatchery chinook consists mainly of Chilliwack Hatchery releases. 2009 adult spawning escapement estimate work at Chilliwack is currently underway. Poorer escapements of 4 year-olds are expected in 2010. Forecasts will be prepared for mid March release. *(2009 Outlook status: 2/3)*
37. Early spring – lower Fraser	1/2	Birkenhead River escapement improved (~625 adults) in 2009, and was well above the brood year (2004) escapement of 180 adults. The parental brood for the 2010 return was much stronger (1,425), however without an indicator stock for this stock group, freshwater and marine survival trends remain unclear. *(2009 Outlook status: 2)*
38. Summer – lower Fraser	1/2	Expectations are for abundance levels for 2010 similar to those seen in 2009, but very little is known about the productivity of these small populations. Maria Slough escapements in 2009 (546 adults) were slightly lower than those observed in the previous year (574). Big Silver escapement was poor, and estimated at ~20. The small size of these populations increases their vulnerability. *(2009 Outlook status: 2)*
39. WCVI-hatchery	2/3	2009 returns were variable: Conuma and Nitinat hatchery returns were above or about pre-season expectations, but Robertson Creek hatchery returns were below expectation. For 2010, returns are expected to be low and similar to 2009 levels. The anticipated return of age-4 fish is low resulting from poor survival of the 2006 brood (for at least SWVI stocks). However, early data suggest high numbers of 'jacks' (age 2 fish) in 2009, which may result in abundant 3-year olds in 2010. *(2009 Outlook Status: 2/3)*
40. WCVI-wild	1	Escapements in recent years are usually well below target for wild origin WCVI Chinook. In 2009, escapements remain below target, but are variable. While in NWVI areas, there are indications of moderate improvements, this trend is not being observed in SWVI areas. Although final escapement estimates and age composition data are currently unavailable, expectations are for continued low returns in 2010. The *(2009 Outlook Status: 1)*
41. Johnstone Strait area including mainland inlets	2/3	Preliminary 2009 returns to the Quinsam River hatchery indicator show similar returns to 2008. Escapement monitoring is ongoing and preliminary information suggests a return of between 5,000 and 6,000 chinook to the Campbell/Quinsam River system Data is sparse for most of the Mainland Inlet Chinook stocks, but most systems surveyed with Chinook populations are well below historic abundances. *Outlook is similar to 2009 with wild stock at low level (2) and hatchery stocks likely near target (3).*
42. Georgia Strait	1	Outlook is for a stock of concern. The 2009 Cowichan River terminal returns are

Species/Stock	2010 Outlook status	Comments
Fall (wild and small hatchery operations)		currently being enumerated, however, projected adult returns (1,000 to 1,200) are much lower than last year. Cowichan jack returns in 2009 are extremely low and indicate a further decrease in abundance in 2010. Returns to Chemainus River are estimated to be low, less than 100. The spawning escapement to Nanaimo River is projecting to be lower than 2008 (approximately 1,000 adults). *(2009 Outlook Status: 1)*
43. Georgia Strait Fall (large hatchery operations)	2	Returns in 2009 to rivers with major hatcheries (Big Qualicum, Little Qualicum and Puntledge) are slightly lower than last year's (2008) returns. Outlook status decreased from 3 to 2 based on low jack Chinook enumerations. *(2009 Outlook Status: 3)*
44. Georgia Strait Spring and Summer	2	2009 returns to Nanaimo River (spring and summer) are lower than near term averages and returns to Puntledge (summer) hatchery are below last year's return, both are below target escapements. Rebuilding efforts are continuing. *(2009 Outlook Status: 2)*
45. Area 7-8	3/4	Dean River and Bella Coola returns are expected to be average. *(2009 Outlook Status: 3/4).*
46. Area 9-10	2/3	Wannock River Chinook returns are expected to be average. The spring-run stocks including the Owikeno tributary stocks and Chuckwalla/Kilbella are expected to be below average as brood year escapements were poor. *(2009 Outlook Status: 2/3).*
47. Coastal Areas 3 to 6	2/3	Stocks are generally depressed and variable and this pattern is expected to continue. Poor quality assessments. *(2009 Outlook Status: 2/3).*
48. Nass	3/4	Average return expected (pending detailed review of the 2009 return age structure). *(2009 Outlook Status: 3/4).*
49. QCI	3/4	Stock appears stable at relatively high levels. *(2009 Outlook Status: 3/4).*
50. Skeena	3/4	Variable ocean survivals for Skeena Chinook in recent years make the outlook uncertain. Average returns similar to recent years are anticipated. *(2009 Outlook Status: 3/4).*
51. Alsek	2/3	Brood year escapements were near what is considered to be the optimal range. Based on the historical stock recruitment relationship, an above average run would be expected. However, it should be noted the brood year escapements are similar to those which produced the runs in 2006 through 2008 which were the three lowest on record. Although the escapement goal was met in 2009, the run size was below the pre-season forecast. Hence, there is much uncertainty over the 2010 run outlook. It appears Alsek Chinook have been in a state of poor productivity (but may be improving) and therefore, the 2010 outlook has been upgraded slightly to reflect this. *(2009 Outlook Status was 2*).
52. Stikine	2	A bilaterally developed run outlook is not yet available but is required by December 01. This stock has been subjected to directed commercial fisheries since 2005 as a result of new provisions under the Pacific Salmon Treaty. Renewed arrangements for 2010 allow for directed fisheries if the preseason forecast is greater than 28,100 large chinook (chinook > 659 mm mid-eye to fork length). Inseason projections of total run size must be >24,500 large chinook for directed fisheries to continue. The preliminary pre-season sibling-based forecast is 24,800 large Chinook suggesting production will be below the preseason trigger for conducting a directed fishery in Canada. This outlook will be updated once the TTC has completed its analysis (by Dec. 01). A directed Canadian commercial fishery will not occur in 2010 unless the inseason run projections exceed the thresholds indicated above. *(The 2009 Outlook Status was 3).*
53. Taku	3	Taku Chinook salmon have been managed under a new PST fishing regime implemented in 2005 and renewed for the 2009-2018 period with some minor

Species/Stock	2010 Outlook status	Comments
		modifications. The Transboundary Technical Committee (TTC) was tasked to review the Taku chinook escapement goal and presented an interim revised goal which was in place for the 2009 season. It is anticipated that the interim status of this goal will be removed for remainder of the 2009-2018 period. The revised goal is 25,500 large Chinook with a range of 19,000 to 36,000 fish; the previous goal range was 30,000-55,000 with a point target of 36,000 large Chinook. A bilaterally developed run outlook for 2010 is not yet available. However, a preliminary look at the 2009 return and historical sibling relationships suggests that the 2010 run will be somewhat below the average of 47,000 large Chinook. Using the new escapement goal, a run of this magnitude will permit a small directed chinook fishery in both Canada and the U.S. based on PST harvest sharing arrangements. This outlook will be updated once the TTC has completed its analysis. A bilateral forecast is required by December 01. *(The 2009 Outlook Status was 3).*
54. Yukon	2 / 3	A below average run is expected in 2010. The Yukon Chinook salmon database was revised in the spring of 2008 and an Interim Spawning Escapement Goal (IMEG) of >45,000 was adopted for 2008 and 2009. Revised estimates of the total upper Yukon spawning escapements from 2003 to 2005, the three primary brood years contributing to the 2010 run, exceeded the IMEG. However, total production has not yet returned to the levels observed prior to 1998. The 2007 and 2008 runs were unexpectedly weak and conservation measures were required (i.e. there were no Canadian commercial or domestic fishery openings and Chinook retention was varied to zero in the recreational fishery). The 2009 run was below average and conservation measures were implemented throughout the drainage to meet PST obligations and conservation objectives. If the factors contributing to the weak runs in 2007 and 2008 and below average run in 2009 persist, fishing opportunities may again be limited in 2010. (*2008 and 2009 Outlook Status was 2 / 3).*
Coho		
55. Mid/upper-Fraser	1	2009 escapement surveys are underway. Preliminary indications are for escapements to be above those of the brood year (2006). Rebuilding will continue to be affected by marine survival, which may be improving slightly. Parental brood escapements in 2007 were fair; sustained improvements in marine survival will be required to improve status. *(2009 Outlook status: 1)*
56. Thompson	1	2009 escapement surveys are underway. Preliminary indications are for escapements to be above those of the brood year (2006). Rebuilding will continue to be affected by marine survival, which may be improving slightly. Parental brood escapements in 2007 were fair; so sustained improvements in marine survival will be required to improve status. *(2009 Outlook status: 1)*
57. Lower Fraser	1 / 2	2009 escapement surveys are underway. Preliminary indications are for escapements to be above those of the brood year (2006). Rebuilding will continue to be affected by marine survival, which may be improving slightly. Parental brood escapements in 2007 were fair; so sustained improvements in marine survival will be required to improve status. *(2009 Outlook status: 1/2)*
58. WCVI	2	2009 returns were abundant and above expectation and probably due to favorable marine conditions experienced during the 2008 sea entry year. Although returns of jack coho (age 2.0 fish) are only an indicator of adult returns of the same brood, very few jacks have been observed in 2009. This observation may indicate a return to less favorable marine conditions in the 2009 sea entry year, which is corroborated by observations of marine and climatic conditions (i.e. developing El

Species/Stock	2010 Outlook status	Comments
		Nino in the spring of 2009). *(2009Outlook Status: 2)*
59. Area-12	2 / 3	Monitoring of the Keogh River indicator is ongoing but early indications are that marine survival has improved over the last few years. Extensive monitoring of certain key streams in the area is still ongoing but preliminary data suggest returns are showing similar signs of improved marine survival. In 2009, Keogh smolt production was well above average, the 2nd highest since 1997 and slightly higher than what we encountered in 2008. If marine conditions remain comparable to the 2008 out-migration year, we could anticipate similar returns of coho to the area. Expectations are for returns similar to the last 3 years but are highly uncertain. *(2009Outlook Status: 2/3)*
60. Area-13 North	2	It is early in the monitoring of returns for these stocks but indications are similar to Area 12 with larger than anticipated returns likely attributed to improved marine conditions during the 2008 out migration. A continuation of improved marine conditions is anticipated, but stocks will likely remain depressed due to low numbers of brood year spawners. *(2009Outlook Status: 2).*
61. Georgia Strait	1/2	The 2008 marine survivals ranged from 0.4% to 0.7% for hatchery stocks and 0.6% for the wild indicator (Black Creek). Smolt production from Black Creek in 2008 was below average, however, early indications of 2009 returns are projecting to be much better than 2008 returns indicating an increase in marine survival. The 2010 expectation is for continuing low returns similar to last year. *(2009 Outlook Status: 1/2)*
62. Area-7-10	2/4	2006 brood year escapements were generally very low. Survivals were very good for the 2009 returns and relatively poor 2006 to 2008. Returns are uncertain and depend on the survivals of the juveniles to sea in 2009. *(2009 Outlook Status was 2)*
63. Area 5/6	2/4	Very high survivals in 2009 returns compared to relatively poor survivals 2006 through 2008. Returns are uncertain and depend on the survivals of the juveniles to sea in 2009. *(2009 Outlook Status was 2/4).*
64. Area-3	3/4	Strong return is expected, but depends on the survivals of the juveniles to sea in 2009. *(2009 Outlook Status was 3/4).*
65. QCI-E (Area 2E)	3/4	Assessments limited to two populations since 2002 (Tlell weir and Deena intensive escapement surveys). *(2009 Outlook Status was 3/4).*
66. QCI-N (Area 1)	ND	No recent assessments. *There is no change in the outlook status from 2009*
67. QCI-W (Area 2W)	ND	No recent assessments. *There is no change in the outlook status from 2009.*
68. Skeena	3/4	Returns are uncertain and depend on the survivals of the juveniles to sea in 2009. Outlook for lower Skeena tributaries is less certain, based on poor quality assessments. *(2009 Outlook Status was 3/4).*
69. Skeena – high Interior	2/3	Returns are uncertain and depend on the survivals of the juveniles to sea in 2009. *(2009Outlook Status: 2/3).*
70. Alsek	2/3	A well below average run is expected based on low weir counts in the Klukshu River in 2006 and 2007, and what appears to be recent poor marine survivals. *(2009 Outlook Status was 2/3)*
71. Stikine	3	An ABM regime has not yet been developed for this stock. Under the current PST arrangements, Canada is permitted to harvest 5,000 coho in a directed fishery. Reliable brood year escapement data is limited and available information is contradictory: extrapolated test fishing indices were well above average, yet results from limited aerial surveys were below average. Based on data of limited quality, the 2010 return is expected to be above average. *(2009 Outlook Status was 3)*
72. Taku	3	For 2010, a below average run is expected based on the estimated smolt abundance

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		in 2009 combined with recent smolt-to-adult survival data. However, it is anticipated that the run will be sufficient to allow the harvest of 3,000-10,000 coho in a directed fishery, plus the potential excess to spawning escapement requirements, as identified in the new PST arrangements. *(2009 Outlook Status was 2/3)*
73. Yukon	ND	Little is known about the stock status within Canadian portions of the Yukon River drainage. Harvest data from the U.S. portion of the drainage indicates spawning abundance decreased since 1984-91 but has recently been increasing. The general sense in Alaska is that recent exploitation is low and has been influenced by conservation actions to protect co-migrating fall chum particularly since 1998.
Pink		
74. Fraser – Odd	n/a	Relative to the odd numbered years, insignificant abundance of pink return to the Fraser River in even numbered years (2009 Outlook status: 4)
75. Squamish - Odd	ND	No qualitative assessment information is available. *(2009 Outlook status: ND)*
76. WCVI-Odd	ND	No quantitative assessment information is available.(2009 Outlook status: ND)
77. Area-11/13-Even	2/3	The odd year cycle line of pink salmon to this area has continued to demonstrate an improving trend over the last few cycles. The strong returns in 2009 indicate improved marine conditions attributing to better survivals. If marine conditions remain the same and survivals continue to improve, the weak returns encountered in 2008 may improve in 2010, although abundance to some stocks will be constrained due to the severely depressed brood returns. The even year return of pinks to this area is typically the dominant cycle year for most systems. With current declining trends in even year abundance in the upper portion of the area, the expectations for 2010 are to be low to near target abundance. Stocks in the southern portion of the range will likely encounter similar levels of abundance as encountered in 2009 due to the strength observed in 2008 and the improved marine conditions that those out-migrants encountered in 2009. Historically, pink returns to this area have been highly variable and expectations are highly uncertain. *(2008 outlook status was 2/3).*
78. Georgia Strait-west	2/3	Preliminary information suggests returns in 2009 are much higher than average. Seapen returns in 2009 were excellent in Nanaimo and Cowichan. Outlook is for highly variable returns, (natural returns low, seapen returns average to good). *(2009 Outlook Status: 2/3)*
79. Georgia Strait – east	2	Assessment information on pinks in this area is limited. Enumeration at Lang Creek fence was much higher than average and amongst the highest estimate on record. The expectation is for low returns with the exception of seapen returns which may experience higher survivals. *(2009 Outlook Status:2)*
80. Area-7/10 Odd	2	2008 brood year escapements were extremely poor. Well below average returns are expected. *(2008 outlook status was 3).*
81. North Coast Areas-3/6 Odd	2	2008 brood year escapements were extremely poor. Well below average returns are expected. *(2008 outlook status was 3).*
82. QCI- Odd	2	2008 brood year escapements were poor. Returns are expected to remain highly variable. *(2008 outlook status was 3).*
Chum		
83. Fraser River	2/3	Quantitative forecasts are not prepared for Fraser River chums (catch by stock and escapement information is limited). On average, the largest contributing age class to Fraser chum escapement is 4 year-olds (75-85%). Consequently, the most

Species/Stock	2010 Outlook status	Comments
		significant brood year contributing to the returns in 2010 should be from the 2006 escapement. Fraser chum escapement in 2006 was assessed at 2.0 M; this is equal to the recent 11 year escapement average (1998-2008 average: 2.0 M). However, Fraser chum escapement has been trending downward over the last 11 years. Both the 2007 & 2008 escapement was estimated at 1.0M; the escapement goal for Fraser chum is 0.8 M. An estimate of the 2009 escapement is not yet available although early indications are that escapement to some of the largest contributors (e.g. Harrison & Stave) are substantially below recent levels. Hatchery contribution to recent escapement is poorly understood. Production releases of fed fry have declined in the Fraser since the 1990's (from a 20M annual average for 1991-1997 to a 5.5M average for 1998-2008; hatchery releases of fed fry of the 2006 brood totaled only 4.3M. Although parental escapement in 2006 was high, the recent downward trend in escapement, the early indications of lower than average escapement in 2009, and a decrease in hatchery production of fed-fry for this brood year, provides for an assessment of low to near target. *(2009 Outlook status: 3)*
84. WCVI	2	2008 and 2009 chum returns are well below average across WCVI stocks. Return expectations for 2010 are for continued low abundance, pending compilation of 2009 age data and completion of the pre-season forecast. It appears that for chum, as well as WCVI chinook, the 2007 sea entry year was unfavorable. These fish will return as 4-year olds in 2010. *(2009 Outlook Status was 2 / 3)*
85. Johnstone Strait area and mainland inlets (Area-11-13)	3	Returns of the 2006 brood year, the major contributor to next year's 2010 return, were above average for both fall and summer run chum in most of the Study Area. Returns in 2009 appear to be as anticipated and below average for the area. Marine survivals for the 2006 (2009 return) and 2007 (2010 return) out migration years appear to be low based on subsequent returns of coho, pink, and chum salmon. Expectations for 2010 are near target based on the below average returns encountered in 2009 (preliminary), the above average parental brood abundance of the 2006 return, and the high variability in chum returns. Summer chum stocks in 2006 were very strong throughout the area and if survivals improve may show strong abundance again in 2010. *(2009 Outlook Status was slightly lower:2/ 3)*
86. Georgia Strait	3	Brood year (2006) escapements were average. Survival rates appear average to low. Preliminary 2009 returns are projecting to be higher than the pre-season forecast for southern Strait of Georgia and Puntledge. Big and Little Qualicum and Englishman Rivers are projected to be less than forecast. For 2010 a below average return is expected, however, chum forecasts remain highly uncertain. *(2009 Outlook Status:3)*
87. Coastal Areas 5/6	1/4	Widespread Long term decline among small and medium wild stocks. Kitimat enhanced return strength uncertain; depends on ocean survivals. *(2009 Outlook Status was 1/4)*
88. QCI	2/3	Variable brood year escapements may result in local surpluses. *(2009 Outlook Status was: 2/ 3)*.
89. Skeena-Nass	1/2	Poor returns expected. Brood year escapements were relatively poor. Long term depression among wild stocks. *(2009 Outlook Status was 1/2).*
90. Area-7-10	3	Brood year strength indicates average to below average returns in most areas. Survivals have been highly variable in recent years. *(2009 Outlook Status:3).*
91. Yukon	2/3	This stock group includes upper Yukon River populations (excluding Porcupine drainage stocks). Spawning escapements have exceeded targets since 2002 although severe conservation measures were required in Alaska and Canada in 2009. Escapements in 2005 and 2006, the principle brood years contributing to the

Species/Stock	2010 Outlook status	Comments
		2010 run, were well above the minimum goal of 80,000 fish established for a rebuilt stock. The 2005 escapement was by far the highest observed (438,000) and the 2006 escapement was approximately 211,000 chum salmon; both were well above the long term average of approximately 96,000 chum salmon. However the return of age-4 chum in 2009 was well below replacement (as predicted by the stock :recruitment model). There is an expectation that this will also be the case for both the age- 4 and age-5 chum returning in 2010. Therefore, a below average run is expected in 2010. *(2009 Outlook Status: 3/4)*
92. Porcupine (Yukon)	3	An Interim Management Escapement Goal of 22,000 to 49,000 was set for the Fishing Branch River for the 2008-2010 period based on revised analyses. This goal range is substantively less that the longstanding goal of 50,000 to 120,000. The escapements in 2005 and 2006, the principle brood years contributing to the 2010 run, were 121,413 and 30,849, respectively. Similar to upper Yukon chum salmon, there was low production from the 2005 brood year in 2009 and there is an expectation that this will also be the case for the 5-year old cohort returning in 2010. A below average run is expected in 2010. *(2009 Outlook Status was 3)*
93. Taku	2	This stock appears to have stabilized at a low level since 1991, although little information is available. The in-river run abundance index for the primary brood year was low but similar to the recent 10-year average. Non-retention provisions are expected to continue. *(2009 Outlook Status was 2)*

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