Fisheries and Oceans Canada
Pêches et Océans Canada

PACIFIC SALMON OUTLOOK
PACIFIC REGION
2005

Canada

2005 SALMON STOCK OUTLOOK

Beginning with the 2002 Outlook, DFO Stock Assessment has been developing a categorical outlook for salmon stock status. The intent of providing such an outlook is to provide an objective and consistent context within which to initiate fisheries planning. In particular, the broad outlook provides a preliminary indication of potential fishing opportunities and the stocks of concern around which fisheries might be shaped. Annual provision of this outlook is part of ongoing development of an effective, objective and timely salmon fisheries planning process in the Pacific Region.

For each outlook stock group a status outlook is provided on a categorical scale of 1 to 4 (please see the following Table). The category assigned to a stock group reflects interpretation of available quantitative and qualitative information and forecasts as well as expert opinion of its status. In many cases stock targets have not been formally described. In those cases targets were either historical levels or expert opinion.

Stock status implies consequences to fisheries where that 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 following Table. Stock groups that are forecast to be in category "2" are considered to be "sensitive" and in general, fisheries will be planned to reduce impacts on these groups where possible.

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 an 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.

The outlook should be regarded as very preliminary and is subject to change as more information becomes available and as statistical forecasts and assessments are completed and reviewed.

Salmon outlook for 2005

A total of **92** stock groups were considered and outlooks have been provided for **87** of those groups. Thirty-nine of the stock groups are forecast to be at or above target abundance (category 3-4). Of the remaining **48** stock groups, **11** (**two** chum stocks and **nine** sockeye stocks) are forecast to be of some conservation concern (category 1 or 1/2). For clarity some adjacent stock groups have been grouped in the following table where their outlooks were similar.

Species/Stock	Outlook status	Comments
Sockeye		
Okanagan	3	Improved marine survival rates and improving fish passage conditions in Columbia River system dams are resulting in higher rates of migratory success for Okanagan sockeye. The trend of increasing spawner numbers should continue for 2005.
Early Stuart	2	2005 is the peak abundance year for Early Stuarts. The 50% forecast for 2005 (258,000) is only 29% of the cycle line mean (post 1980) of 893,000. The forecast at the 75% level is 175,000. The brood escapement in 2001 was not strong and continued the declining escapement trend observed here since 1993. Returns to the Driftwood River, in the northern portion of the system, have been particularly poor since peaking in 1993.
Early Summer – North Thompson	2/3	Escapement to the Raft River in 2001 was strong and continued the increasing trend seen since 1989. The 50% forecast for 2005 (106,000) is 5.3 times higher than the cycle line mean (post 1980) of 20,000. The forecast at the 75% level is 62,000. Smaller North Thompson stocks have exhibited variable escapement trends. Escapement at Fennell was average during the brood year. The 50% forecast for Fennell in 2005 is 40,000 which is 2.2 times the cycle year average (post 1980) of 18,000. The 75% forecast is 21,000.
Early Summer – South Thompson	2/3	This is a low abundance year and adult escapement trends are highly variable for the South Thompson stocks. Scotch Creek escapement has declined since 1993, while the Seymour River rebounded in 2001 from declines since 1993. The 50% forecast for Scotch Creek in 2005 (12,000) is only half the cycle line mean (post 1980) of 29,000. The forecast at the 75% level is 5,000. The 50% forecast for Seymour River in 2005 (20,000) is 74% of the cycle line mean (post 1980) of 27,000. The forecast at the 75% level is 11,000.
Early summer – upper Fraser	3	The Nadina River stock has shown strong escapement growth over the last four cycles, and should see good 5 yr old production from the large 2000 escapement. Bowron escapement has been trending upwards since 1993, while Gates Creek escapement has been highly variable over the past four cycles. The 50% forecast for Bowron in 2005 (28,000) is 2.0 times the cycle line mean (post 1980) of 14,000. The forecast at the 75% level is 18,000. The 50% forecast for Nadina in 2005 (106,000) is 1.4 times the cycle line mean (post 1980) of 76,000. The forecast at the 75% level is 58,000. The 50% forecast for Gates in 2005 (57,000) is 1.1 times the cycle line mean (post 1980) of 51,000. The forecast at the 75% level is 31,000.
Early Summer – lower Fraser	3	The preliminary 2005 Upper Pitt forecast (50% prob.) of 88,000 is below the 2001 brood year return of 129,000. Pitt escapement has exceeded 63,000 on every year since 2001. In 2001, system escapement to Chilliwack Lake (30,511) was estimated using a counting tower.

Species/Stock	Outlook status	Comments
Summer – Chilko	3/4	The 50% forecast for Chilko in 2005 (2,087,000) is 1.8 times the cycle line mean (post 1980) of 1,520,000. The forecast at the 75% level is 1,518,000. This cycle line has historically been the lowest abundance year at Chilko. However, escapement has been very strong over the last three cycles (10 times pre-1993 levels), despite a decline in 2001 from the cycle year record in 1997.
Summer – Late Stuart	2	This is the peak abundance year for Late Stuart stocks. Escapement for this stock has exhibited a sharp decrease since record levels seen in 1993. The brood year escapement of 183,500 spawners is only 43% of the long term average for the stock. The 50% forecast for 2005 is 1,451,000 which is only 56% of the cycle line mean (post 1980) of 2,608,000. The 75% forecast is 865,000.
Summer – Nechako	3/4	2005 is the low abundance cycle year for Stellako. The past two generations had increasing escapement levels, with the brood year being the record for this cycle. The 50% forecast for 2005 is 562,000 which is 1.6 times greater than the post 1980 cycle line mean of 343,000. The 75% forecast is 375,000.
Summer – Quesnel	4	The 50% forecast for Quesnel in 2005 (6,948,000) is 94% of the cycle line mean (post 1980) of 7,402,000. The forecast at the 75% level is 5,076,000. 2005 is the dominant cycle year for Quesnel stocks. Over the past two generations the stock increased slightly, however the total recruitment to the system in 2001 may have exceeded rearing capacity could result in reduced production.
Fall – Cultus	1	The preliminary escapement estimate for 2004 is <100 fish, well below the 50% forecast of 400 fish. 2005 is an "off-year", and the forecast is <200 fish. In 2003, Cultus smolt outmigration was assessed, 12,818 smolts were observed, the second lowest smolt count on record. A recovery plan is currently being developed and implemented for this stock. The identified threats to this population are fishing, habitat alterations in Cultus Lake, environmental fluctuations, and impacts related to parasites (early migration) and predators (freshwater predation). Recovery activities planned for 2005 include Captive Broodstock, pikeminow removal, milfoil control, and biophysical studies to assess the quality of spawning habitat.
Fall – Portage	1/2	Portage escapement has been trending downwards since 1993. This stock was impacted by early Fraser River entry mortality exhibited by Late Run stocks in 2001 and concern over early entry mortality continues in 2005. The 50% forecast for 2005 (23,000) is only 26% of the cycle line mean (post 1980) of 87,000. The forecast at the 75% level is 11,000.
Fall – South Thompson	1/2	2005 is the second off cycle (low abundance) year for South Thompson stocks. This year should see a strong jack sockeye return in advance of the 2006 dominant year. Late Run stocks have been impacted by mortality associated with early Fraser River entry timing since 1996, however, there has been a steady increase in escapement since 1989 in the South Thompson stocks on this cycle. The 50% forecast (18,000) is well below the cycle line mean (post 1980) of 92,000. The 75% level forecast is 9,000.
Fall – Birkenhead	3	Forecast is based on in-season spawning ground escapement estimates. The 2005 Birkenhead forecast (50% prob.) is 209,000. The brood year escapement (43,410) was estimated using a counting tower.
Fall – lower Fraser	2	The 50% forecast for Weaver in 2005 (108,000) is 30% of the cycle line mean (post 1980) of 360,000. The forecast at the 75% level is 18,000. The preliminary 2004 escapement to Weaver is estimated at 28,000, compared to the 2004 run size forecast (50% prob.) of 57,000. Other LF stocks in this aggregate are small (<10,000) , but appear stable.

Species/Stock	Outlook status	Comments
Sakinaw	1	The 2005 return is unlikely to be more than 150. If the dominant age of return remains 1.2, the 2006 return will be less than 10 and the 2007 return will be near zero. Five hundred spawners is regarded as the minimum number for the population to be viable in the mid to long term so this population is in critical status
Area 11-13	1/2	For these systems and many of the other smaller Johnstone strait stocks (with the exception of Nimpkish) assessment data are sparse, but some stocks are clearly of concern (Village Bay) while others appear depressed.
Somass	2	The 2005 return is likely to be lower than the 2004 return and below average for the stocks. This outlook is based on 1) The poor 2000 brood year escapement, which will likely result in a low 5 year old return; 2) the even lower than expected return of 4 year olds in 2004; and 3) Marine survival indicators suggest ocean conditions for the 2003 smolt year deteriorated; 4) estimates of smolt abundance for 2001 brood were lower than expected. Given low snow packs, unfavorable river migration conditions may occur in-season, which could require further actions to achieve escapement goals.
Henderson	1	Recent escapements have been low despite average estimates of smolt abundance.
WCVI-other	1/2	(Jantzen, Hobiton, Kennedy). Data are sparse but indicate that the Jantzen Lake stock (Kyuquot Sound) is very depressed.
Area 7-10	1/2	Poor returns are forecast for Rivers Inlet (Area 9) and Smith Inlet (Area 10) in 2005 based on extremely low brood years in 2000 and 2001. Returns to Areas 7 and 8 have been depressed but are improving.
coastal 3/6	2/4	Forecast is highly uncertain. Very limited assessment base for evaluation.
Babine Lake enhanced	4	Very low return forecast for 4 year olds based on very low jack returns. Modest 5 year old return expected for a very poor aggregate Skeena sockeye return of 1.5 million.
Skeena wild	1/4	PSARC review in 2003 indicated broadly based issue of severely depressed and declining stocks. Escapement in 2003 showed increases across most stocks while 2004 escapements were generally poorer. Returns in 2005 are expected to remain poor given the relatively poor brood year escapements.
Nass	2 /4	Concerns for non-Meziadin sockeye, only partial coverage. Strong Meziadin Lake return expected again. Aggregate Nass return in the order of 800,000.
QCI	2/4	Poor assessment coverage.
Alsek	2/3	Below average run expected.
Stikine-wild	3	Stikine sockeye had been declining since 1995, however a major improvement in sockeye production occurred in 2003 and 2004 which could be attributed to improved marine survival conditions. Overall this stock is predicted to return in healthy numbers in 2005. Seasonal closures or restriction may be implemented to protect the non-Tahltan component of the run which is predicted to be slightly below average.
Taku-wild	2/3	Special concern for Tatsamenie stock expected to continue.
Chinook		
Early spring – upper & mid-Fraser, North Thompson	2	Populations of concern are Upper Chilcotin, Westroad River, Chilako River. Other earlier returning populations are OK such as Finn Ck., Goat River. No indicator stock.

Species/Stock	Outlook status	Comments
Late summer – South Thompson	4	Indicator is Lower Shuswap. Large returns are expected.
Spring – upper & mid-Fraser, North Thompson	3	Indicator is Dome Creek. Good returns throughout range in 2004. Good returns are expected.
Summer – upper & mid-Fraser, North Thompson	3	No indicator. Strong returns to Chilko, Nechako, but patchy elsewhere. Good returns are expected in 2005.
Spring – lower Thompson	3	Indicator is Nicola. Nicola >10,000, Bonaparte >6,000. Good returns are expected in 2005.
Fall – lower Fraser natural	3 (prelim.)	The 2005 forecast is not yet available. Harrison River fall-run chinook escapement estimates are not yet available for 2004. The forecasted terminal run size of 86,000 for 2004 is near the middle of the range of the escapement goal. The 3 and 4-year olds in 2004 are from the 2001 and 2000 brood years, respectively. The escapement estimates in 2001 (73,100) and 2000 (77,800) were below the previous 10-year average escapement of 102,000 and near the low end of the escapement goal range (75,100 to 98,500).
Fall – lower Fraser hatchery	3 (prelim.)	The 2005 forecast is not yet available. Although there are significant releases of Harrison fall-run chinook stock into the Stave River, lower Fraser fall-run hatchery chinook consists mainly of Chilliwack Hatchery releases. A Chilliwack River chinook escapement estimate for 2004 is not yet available. The forecasted terminal run size of 16,100 for 2004 is significantly less than the average of the estimated escapements in the past three years (60,900). This is due, in part, to a reduction in the number of smolts released from the Chilliwack Hatchery starting in 2001 (broodyear 2000) and continuing today.
Early spring – lower Fraser	2	Birkenhead River chinook escapement was assessed in 2004 with methods similar to previous years. For the broodyears contributing to this years escapement (1999 to 2001), the preliminary escapement estimate in 2004 is less than that estimated in 1999 (147 fish), in 2000 (404 fish) and in 2001 (624 fish). Escapement in 2004 is less than the previous 5-year average (approx. 410 fish), and down for the third straight year. The current trend is for decreasing escapements.
Summer – lower Fraser	3/4	Summer-run chinook status in the lower Fraser River was based on information obtained from Maria Slough through Inch Creek Hatchery.
Georgia Strait – Fall run timing	2	Enhanced stocks somewhat down from peak in 2001 but still near historic high levels. Natural stock survival is low in marine environments and escapements have been well below escapement goals. Limited information from mainland inlets suggests populations are at low levels.
Georgia Strait– Spring/summer	2	Enhanced stocks have improved in recent years but are still at relatively low levels. For Squamish, limited information suggests stock will remain depressed. Anecdotal information from other populations suggests they are at low levels but there is insufficient assessment information to determine their status.
Johnstone Strait area including mainland inlets	2/3	The stock indicator for DFO areas 11-13, the Quinsam River, has shown a stable population with a slight increasing trend. The Klinaklini River wild escapement indicator increased to fairly stable levels recently. Anecdotal information from the for 2004, suggests abundance levels were similar to recent years. Nimpkish River return continues to be low, yet stable
WCVI-hatchery	4	Indications overall are that 2005 returns should be similar to 2004.
WCVI-wild	2	Early data indicates 2004 escapements have increased over 2003 in many 'wild' systems on WCVI, but most were age 5. Few age 3 and 4 fish indicate low returns for 2005. Some systems still had <100 females in 2004.

Species/Stock	Outlook status	Comments
Area 7-8	3/4	2004 escapements have not been finalized, however, preliminary indications suggest chinook escapements to the Dean River, Bella Coola, and Atnarko were similar to last year. Continued terminal fisheries targeting Atnarko chinook are expected in 2005.
Area 9-10	2	The fall-run Wannock River stock, and summer-run Owikeno tributary stocks remain low with tributary stock returns slightly lower than last year. The Wannock deadpitch estimate was 3000. Age data will provide additional insight as to returning 5-yr olds from the poor 1999 escapement. Incremental management action to reduce terminal exploitation of Wannock chinook increased in 2004 with a voluntary gear reduction to one line per angler through Areas 7-9. This measure met with excellent compliance in 2004 although is not expected to be in place for the 2005 terminal sport fishery given higher brood contributors to the coming season.
Coastal Areas 3 to 6	2	Stocks generally depressed but stable. Poor quality assessments except for Kwinamass escapement indicator.
Nass	4	Strong return expected based on informal forecasts of brood year abundance and sibling strength.
QCI	4	Stock shows strong increasing trend.
Skeena	3/4	Moderate return expected based on informal forecasts of brood year abundance and sibling strength.
Alsek	3	Average run expected.
Stikine	3/4	This stock is presently protected from targetted fisheries under the PST - new directed fisheries are under negotiation and may be in place in 2005. Canada, in concert with the US, are obliged to develop an abundance based management regime due for implementation in 2005.
Taku	3/4	Brood escapements within target range. Only limited age data currently available for sibling based outlook.
Yukon	2/3	The Yukon chinook conservation unit involves approximately 100 spawning populations. The 2004 return involved above average escapement due to precautionary fisheries management in both Alaska and Canada and some improvement in run strength that is likely attributed to increased marine survival. However, the overall run size was below average. Below average to poor run sizes have persisted since 1998.
Coho		
Mid/upper-Fraser	2	Rebuilding is affected by marine survival, which continues to be poor-fair and is not expected to improve in the near future.
Thompson	2	Rebuilding is affected by marine survival, which continues to be poor-fair and is not expected to improve in the near future.
Lower Fraser	2	Smolt output in 2004 increased over 2003 but remained slightly less than the average smolt output (calculated from the previous six years). Assuming smolt-to-adult marine survivals for the offspring of the 2002 returns are similar to recent years the outlook for 2005 returns is poor.
Area-12	2	The area 12 wild indicator, the Keogh River, has shown an improvement in marine survival over 2003 with an increase in overall escapement. Extensive coverage of some of the Mainland systems have also demonstrated stable abundance levels compared to recent years. Smolt production from Keogh in 2004 was lower than average and may be attributed to the very dry spring. 2005 outlook is for levels

Species/Stock	Outlook status	Comments
		similar to those of the past 3 years.
Area-13 North	2	2005 outlook is for levels similar to those of the past 3 years.
Georgia Strait	2	Coho smolts entering the Strait in 2004 from monitored streams were 64% of the 1999 – 2003 mean and 71% of 2003. Trends in marine survival since 2001 suggest a low rate similar to 2004: about 1% for hatchery stocks and 4% for wild stocks. With reduced smolt recruitment and continued low survivals, the outlook is for low returns. There is limited scope for improvement in status until marine survivals increase. Stocks are expected to have a strong, outside marine distribution.
WCVI	3	Monitored wild smolts were about 75% as numerous in 2004 (adult return is in 2005) as they were in the recent 5 year mean. Using jacks in Stamp River, it is most probable hatchery coho will survive and return similar to the 2004 return. Based on this comparison, returns are most likely to be approximately 75% of the 5 year mean (1999-2003). The returns of the wild stocks are forecast to improve over the 2004 return, and be near average return.
Area-7-11	3/4	Preliminary indications suggest returns in 2004 to intensive indicators (Atnarko Tower and Docee River) were strong with average to above average returns observed.
Area 5/6	2/4	Stocks continue to rebuild in Area 6, Area 5 not assessed.
Area-3	3/4	Area 3 stocks continue to be strong.
QCI-E	3/4	Assessments poor since 2002, status based on previous assessments.
QCI-N	3/4	Assessments poor since 2002, status based on previous assessments.
QCI-W	3/4	Assessments poor since 2002, status based on previous assessments.
Skeena	3/4	Middle and upper Skeena stocks continue to rebuild. Lower Skeena tributaries poorer, based on poor assessments.
Skeena – high Interior	2/3	Stocks rebuilding slowly, assessments poor.
Alsek	3	Average run expected.
Stikine	3	As with Stikine Chinook, Canada and the US are obliged to develop ABM regimes for this stock.
Taku	2	Improved marine survival in last 2-3 years coupled with low exploitation has resulted in improved in-river run sizes.
Yukon	ND	Little is known about the status of Yukon coho salmon. Harvest data from the US portion of the drainage indicates utilisation has been decreasing over the past 3 cycles. However it is unknown how reflective this is of overall stock status. The general feeling in Alaska is that coho exploitation is low and has been reduced in recent years due to conservation actions taken to protect fall chum.
Pink		
Lower Fraser-odd	4	Fraser River pink escapement was not assessed quantitatively with standard method in 2003, yet the PSC in-season hydro-acoustic estimate for 2003 Fraser Pink escapement at Mission is 26 Million. In 2004, Fraser pink fry out migration was estimated at 411 Million compared to an average of 429 Million (1975-2001). The 50% forecast in 2005 (16,300,000) is 1.2 times the cycle line mean (post 1980) of 14,100,000.
Georgia Strait - east	ND	No quantitative assessment information is available for this stock.

Species/Stock	Outlook status	Comments
Squamish-odd	ND	No quantitative assessment information is available for this stock.
Area-11/13-odd	2/3	The preliminary assessment of the returns to Area 12 Mainland Inlets indicates that abundance was significantly higher than in the 2002 brood year. Preliminary analysis suggests that survivals of the 2002 brood were well above average indicating improved marine conditions in 2003. Preliminary information from Area 13 Mainland Inlets, indicate at reduction in abundance compared to the 2002 brood. Historically, pink populations in the mainland inlets have been highly variable.
Georgia Strait - west	2	Several streams in the Qualicum area are enhanced and should continue to provide limited fishing opportunities
WCVI-odd	ND	No quantitative assessment information is available for this stock.
Area-7/10-odd	3	Pink Escapements to Areas 7 and 8 are expected to exceed escapement targets with continued directed fisheries. Pink returns to Area 9 and 10 are expected to remain strong though no directed fisheries are expected in these areas.
North Coast - Areas-3/6-odd	3/4	No formal forecasts, stocks have been strong but variable over the last decade.
QCI-odd	TBD	Off cycle year.
Chum		
Fraser River	3/4	2004 in-river Albion test-fishery catches indicate a run-size exceeding the escapement goal (50% probability level is 1.7 million). 2005 brood-year escapements of chum returning as 3 year olds (2002: 2.1 M) and 4 year olds (2001: 1.9 M) exceeded the escapement goal of 800,000 in the Fraser. No forecasting is done for Fraser chum only in-season run-size estimates are produced using a Bayesian model.
Johnstone Strait area and mainland inlets (Area-11-13)	3	Preliminary info for 2004 suggests improved marine survivals. Combining the average brood return encountered in 2001, expectations of average to above average returns in 2005.
Georgia Strait	3	Brood year (2001) escapements were good. Survival rates appear to be above average. However, forecasting remains highly un-predictable. Fishing opportunities are expected.
WCVI	3	Brood year (2001) escapements were good. Survival rates appear to be above average. Returns to hatcheries are expected to be good. However, forecasting remains highly un-predictable. Fishing opportunities are expected.
Coastal Areas 5/6	1/3	Long term broadly base decline among small and medium wild stocks. Brood year escapements relatively poor.
QCI	2/4	Mixed generally poor expectations based on brood year escapements.
Skeena-Nass	1/3	Long term broadly base decline among wild stocks. Brood year escapements relatively poor.
Area-7-10	3	2004 Escapements have not been finalized, however, Areas 7 and 8 had substantial catches and preliminary escapements are at or near target levels. For Areas 9 and 10, there are indications that runs remained strong (Chuckwalla, Kilbella, and Nekite Rivers).
Taku	2	Taku chum stocks considered to be depressed since 1991. Good information on stock status is lacking.

Species/Stock	Outlook status	Comments
Yukon	2	The Yukon chum conservation unit involves the upper mainstem Yukon populations. The 2004 return involved improved escapement to the upper Yukon spawning areas due to precautionary fisheries management in both Alaska and Canada and some improvement in run strength that is attributed to increased marine survival. Some recent returns involved below average escapement.
Porcupine (Yukon)	2	The Porcupine chum conservation unit includes stocks of the Porcupine River drainage, a major tributary of the Yukon River. The 2004 run included improved escapement into the Porcupine system due to precautionary fisheries management in both Alaska and Canada and some improvement in run strength that is likely attributed to increased marine survival. The main indicator stock, Fishing Branch River chum, has been depressed at least since 1997.

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