



Fisheries and Oceans
Canada

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PACIFIC SALMON OUTLOOK
PACIFIC REGION
2017

Canada 

2017 SALMON OUTLOOK

Since 2002, Pacific Region (BC & Yukon) Stock Assessment staff has provided a categorical outlook for the next year’s salmon returns. 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 stock groups called an Outlook Unit. The Conservation Units covered by each Outlook Unit are listed in Appendix 1.

Final stock-specific fishing plans described in the annual Salmon Integrated Fisheries Management Plan (IFMP) may be different from the generic scenarios described here. Stock-specific plans are informed by available science and management information, the specific nature of fisheries on a given stock, allocation policy, consultation input and other considerations. Actual fishing opportunities are subject to in-season information and are announced in-season via fishery notice or other official communications from DFO.

For each Outlook Unit, an Outlook Category is provided on a 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 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 developing benchmarks of status under the Wild Salmon Policy.

Outlook Categories influence fisheries expectations where an Outlook Unit is caught directly or incidentally. In the context of this outlook, potential fishery consequences associated with each of the four Outlook Categories are identified in the table below.

Outlook Category	Category Definition	Criteria	General Fisheries Expectations ¹
1	Stock of Concern	Stock is (or is forecast to be) less than 25% of target or is declining rapidly.	Fisheries opportunities highly restricted including non-retention, closures or other measures. Likely requirement for management measures in fisheries targeting co-migrating stocks to minimize by-catch or incidental impacts.
2	Low	Stock is (or is forecast to be) well below target or below target and declining.	Directed fisheries opportunities unlikely or very limited (subject to allocation policy considerations). Potential requirement for management measures in fisheries targeting co-migrating stocks to minimize by-catch or incidental impacts.
3	Near Target	Stock is (or is forecast to be) within 25% of target and stable or increasing.	Directed fisheries possible subject to allocation policy and other considerations laid out in IFMPs, including measures to address weak stocks that may be present during fisheries.
4	Abundant	Stock is (or is forecast to be) well above target.	Directed fisheries are likely for all harvesters subject to allocation policy and other considerations laid out in IFMPs including measures to address weak stocks that may be present during fisheries.

¹ “General Fisheries Expectations” provides a generalized description of the potential fisheries consequences of each outlook category.

It is important to note that the fishery expectations implied by any of the Outlook Categories do not reflect interactions with stocks in other Outlook Units. Consequently, conservation requirements for stocks in Outlook Units at Outlook Categories 1 and 2 may limit fishing opportunities for Outlook Units at a higher Outlook Category. Where possible, the comments associated with each Outlook Unit identify such potential constraints. A range of Outlook Categories indicates significant geographic variation in outlook within the Outlook Unit and fisheries may be shaped in response to that variation.

This version of the 2017 outlook should be regarded as an early scan of salmon production, and as subject to change as more information becomes available. This preliminary version of the document may be replaced by a final version, planned for release in May 2017. However, individual outlooks may be periodically updated as statistical forecasts and assessments are completed and reviewed.

Summary of Pacific Salmon Outlook Units for 2017

A total of **91** Outlook Units were considered and outlooks categorized for **82**. Nine (**9**) units were data deficient (ND). Twenty-eight (**28**) Outlook Units are likely to be at or above target abundance (categories 3, 4, 3/4), while **30** are expected to be of some conservation concern (categories 1, 2, 1/2). The remaining **24** Outlook Units have mixed outlook levels (categories 1/3, 1/4, 2/3, 2/4). Overall, the outlook for 2017 has improved relative to the previous outlook (2016 for most species but 2015 for pink). Sixteen (**16**) Outlook Units improved in category (Early Summer–North Thompson, Summer–Chilko, Summer–Nechako, Summer–Quesnel, Summer–Harrison, Summer–Raft, Fall–South Thompson, Fall–Birkenhead, Fall–Lower Fraser, Nass, Stikine–Wild and Taku–Wild sockeye; Fraser River Fall Run 4₁ Chinook; Mid and Upper-Fraser and Thompson coho; and Georgia Strait – West pink). Eight (**8**) units declined in category (Somass sockeye; Fraser River Summer Run 4₂, Fraser River Spring Run 5₂, Fraser River Summer Run 5₂, Alsek Chinook; Fraser, Area 7 to 10 pink; and Fraser chum).

General Observations:

Returns of most Pacific salmon stocks have been increasingly variable due to a combination of factors such as: numbers of parental spawners and the changing freshwater and marine environment affecting subsequent production from these spawners at various life history stages. The 2017 outlook for salmon returns shows this variation but also suggests a period of continued reduced productivity. Returns of salmon in 2017 may continue to be influenced by previous exposure to extremely warm water temperatures in the central NE Pacific ocean (the “warm blob”) and El Nino conditions, and the resulting changes in the marine food web – zooplankton composition, density, and distribution. For Pacific salmon, the full implications of these conditions are uncertain; however, these conditions have been linked to reduced survival and/or growth for salmon in the past. These conditions could also affect returning adults in 2017 through changes in age-at-return, fish condition, migration routes, and run timing.

A general summary of expected returns and potential fishery opportunities for species and major river systems are outlined below. This information is provided as a general indication of potential fishing opportunities. Actual fishing opportunities for many populations are based on in-season information and assessments.

Sockeye

- Nass River: Below average returns and limited opportunities for directed harvest expected.
- Skeena River: The 2017 return is expected to be poor based on the poor contributions of age 4 sockeye from the lowest return on record in 2013 and weak returns of age 5 sockeye from the 2012 brood year. Return rates have become more uncertain in recent years, with greater variability among the Skeena stock components and brood year survival rates. Returns expected to limit harvest opportunities.
- Fraser River: Below average returns are expected for most Fraser sockeye populations. Summer run sockeye populations are expected to comprise the majority of the total Fraser sockeye returns. Harvest opportunities are uncertain.
- Somass River: After abundant returns of 2015 and 2016, expectations for the 2017 Somass sockeye return are very low with limited harvest opportunities.
- Quantitative forecasts will be provided at a later date for sockeye populations.
- Fishing opportunities for sockeye are determined based on in-season assessments of actual sockeye returns.

Pink

- Northern BC: Potential for good returns in some stocks in Areas 3 to 6 based on brood year escapements, opportunities for directed harvest expected; poor returns expected in Areas 7 and 8.
- Southern BC: Fraser River pink salmon return in odd years, however, below average returns are expected in 2017 based on fry outmigration from the Fraser River. Opportunities for directed harvest will be based on inseason information. Local pink abundances in other areas of Georgia Strait may provide opportunities for harvest.

Chinook

- Returns are expected to vary considerably depending on area due to on-going fluctuations in survival rates and variable parental spawner abundance.
- Northern BC: Recent average or below average returns are expected in the Skeena and Nass Rivers. Variable returns in other systems with above average returns expected in the Bella Coola area.
- Southern BC: Variation in abundance between stocks will continue. Some populations are stocks of concern or are expected to return at low levels due to low spawner abundance and persistent low survival rates. Expect continued discussion on fishery restrictions to limit exploitation rates on many of these populations. Returns of South Thompson-origin chinook are expected to be improved compared with 2016 given a strong brood year escapement, however, survival rates are uncertain. Cowichan chinook are expected to return near goal.
- Yukon chinook: Returns to Canada are expected to remain below the long-term average; fisheries opportunities are uncertain.
- Quantitative forecasts of abundance for some populations and the Abundance Indices for Pacific Salmon Treaty Aggregate Abundance Based Management (AABM) ocean fisheries will be provided in 2017.

Coho

- Survival rates of coho remain variable and are still below historic highs in most areas, particularly Southern BC.
- Northern BC: Coho populations generally continue to exhibit higher productivity and returns than southern populations, especially earlier runs of summer coho in some of the larger river systems. Fall coastal coho returns continue to be variable across the north. However, returns are uncertain and will depend on survival rates of juveniles that went to sea in 2015. Opportunities for incidental harvest expected.

- Southern BC: Coho populations, particularly Interior Fraser River coho, remain in a low productivity period. Conservation measures and harvest restrictions will be required in southern fisheries to limit impacts on these populations.

Chum

- Chum forecasts are highly uncertain.
- Northern BC: Improved escapements seen for chum stocks in the Skeena River and Nass River in 2016 relative to recent years. However, poor returns expected in 2017 from very poor brood year escapements. Wild brood year escapements for Central Coast stocks were generally good. Returns of enhanced stocks are dependent upon ocean survival which has been highly variable in recent years.
- Southern BC: Inside chum returns are expected to support fisheries. Fisheries are managed using a cautious harvest strategy that provides for harvest opportunities for all groups in mixed stock areas and terminal opportunities subject to meeting escapement targets. Fraser River chum are expected to be abundant. Local opportunities may be considered for enhanced WCVI chum.
- Yukon mainstem chum: An above-average run is expected in 2017.

Outlook Unit Sockeye	2017 Outlook Category	Comments
Sockeye		
1. Okanagan-Osoyoos	2	<p>The 2013 brood year escapement of 23,341 (peak live plus dead terminal count) was only 67% of the Canadian domestic target for this CU. Returns of Okanagan sockeye adults to the Columbia and Okanagan rivers in 2017 will be derived from smolt cohorts that migrated seaward in spring 2014 (returning as 5-year-olds), 2015 (returning as 4-year-olds) and 2016 (returning as 3-year old “jacks” or “jills”). Although year-specific smolt-to-adult survival values for these specific cohorts are not available as yet, Okanagan sockeye marine survival variations are known to be similar to Barkley Sound sockeye in that above and below average survivals occur in association with either cold-ocean (La Nina) or warm ocean (El Nino) events respectively. Marine survival of two of three sea entry years noted above were likely to be influenced by warm ocean conditions at sea entry due to the onshore effects of the North Pacific warm “blob” of 2014-2015 and the development of a very strong El Nino event in 2015-2016. Consequently, an all-year average smolt-to-adult survival rate of approximately 3% has been applied to annual smolt production values derived from fall fry surveys such that production expected to originate from the 2012, 2013 and 2014 brood years is estimated to be about 259,000 adults contributing to the 2016-2018 return years. Allocation of this production to specific return years based on average age-at-return values for Okanagan sockeye suggests a total return in 2017 on the order of 25,000 jacks and jills (i.e. small age-3 fish) plus 71,700 larger and older (ages 4, 5 and 6) fish. Further to this, in 2013 hatchery-origin fry outplants to Skaha Lake were temporarily suspended while a new hatchery at Penticton was under construction. Consequently, virtually all returns in 2017 will consist of wild-origin sockeye. A revised forecast of returns for 2017 based principally on new information regarding returns of jacks in 2016 and an associated sibling model is for total returns of Okanagan sockeye of 138,000 adults of all ages (includes jacks and jills) in 2017. Given a domestic escapement objective of roughly 60,000 adults through Wells Dam and an associated terminal escapement of 35,000 sockeye at Oliver could result in a surplus of only 28,000 large adults and possibly and 50,000 jacks or jills to support fisheries in both the U.S. and Canada while still achieving Canada’s current domestic escapement objective. <i>(2016 Outlook Category was 2)</i></p>

Outlook Unit Sockeye	2017 Outlook Category	Comments
Fraser Sockeye	Overview	<p>Quantitative forecasts for Fraser Sockeye stocks are published annually through the Canadian Science Advisory Secretariat (CSAS) process. The 2017 forecasts will be published as a Science Response at the following link: http://www.isdm-gdsi.gc.ca/csas-sccs/applications/Publications/index-eng.asp</p> <p>The dominant age-of-maturity for most Fraser Sockeye stocks is four years, so Sockeye returning in 2017 as four year olds originate from the 2013 brood year. Five year olds returning in 2017 originate from the 2012 brood year. A number of stocks returning in 2017 had small brood year escapements for five year olds, therefore, for these stocks, five year olds would be expected to contribute less to total returns compared to average. A number of stocks returning in 2016 exhibited poor four year old survival, which would further reduce the expected contribution of five year olds in the 2017 forecast.</p> <p>Fraser Sockeye returns exhibited below average survival for many but not all stocks in 2016. However, since direct links to environmental conditions cannot be made at this time, it is unclear if below average survivals will persist and influence survival of four year olds returning in 2017. Environmental conditions that contributed to the large mass of warm water in the North Pacific (the warm blob) have persisted, and survival of returns in 2017 could be affected. A supplement to the Fraser Sockeye forecasts is produced as part of the 2017 forecast process and will be published as a second Science Response on the following website: http://www.isdm-gdsi.gc.ca/csas-sccs/applications/Publications/index-eng.asp</p>
2. Early Stuart (CU: Takla-Trembleur-Early Stuart)	1	<p>Very low returns are expected in 2017 relative to the cycle average of 754,000 (1953-2013). Although the 2013 cycle is the dominant cycle line for Early Stuart, the escapement in 2013 (39,700 effective female spawners: EFS) was less than half the cycle average for this stock (104,600 EFS). Given the age of maturity of Early Stuart is predominantly four year olds, five year olds are expected to contribute a small proportion to the 2017 returns. This proportion will be further reduced since 2012 is the weak cycle line for this stock, and also by the small 2012 brood year escapement for Early Stuart (6,800 effective female spawners: EFS), which was well below the 2012 cycle average (18,700 EFS). This CU is in the Red WSP status zone. (2016 Outlook Category was 1)</p>
3. Early Summer – North Thompson (CU: North Barriere-ES)	2	<p>North Barriere River (previously identified as Fennell Creek): Average returns are expected in 2017 relative to the cycle average of 11,600 (1973-2013). The 2013 brood year escapement for North Barriere (2,000 EFS) was very similar to the cycle average (1,900 EFS). Given the age of maturity of North Barriere River is predominantly four year olds, five year olds are expected to contribute a small proportion to the 2017 returns. This proportion will be further reduced since the 2012 brood year escapement for North Barriere (700 EFS) was very small and only 15% of the cycle average (4,700 EFS). This CU is in the Amber WSP status zone. <u>Note the change to CU composition in last two years; Raft has been moved into the Summer Run.</u> (2016 Outlook Category was 1)</p>

Outlook Unit Sockeye	2017 Outlook Category	Comments
<p>4. Early Summer South Thompson</p> <p>(CU: Shuswap- ES)</p>	<p>2</p>	<p>Scotch (combined with Seymour for Shuswap-ES CU): The 2017 return for Scotch is expected to be smaller than the cycle average of 2222,000 (1985-2013). The 2013 brood year escapement for Scotch (11,000 EFS) was almost triple the cycle average (3,800 EFS); however, Scotch is expected to experience reduced survival due to freshwater impacts from the large 2010 brood year escapement. Given that the age of maturity of Scotch is predominantly four year olds, five year olds are expected to contribute a small proportion to the 2017 returns. This proportion will be further reduced since the 2012 cycle is the weak cycle line for Scotch and the 2012 brood year escapement (700 EFS) was similar to the cycle average (800 EFS).</p> <p>Seymour (combined with Scotch for Shuswap-ES CU): The 2017 return for Seymour is expected to be smaller than the cycle average of 28,000 (1953-2013). The 2013 brood year escapement for Seymour (including McNomee) (13,900 EFS) was more than three times larger than the cycle average (3,800 EFS); however, Seymour is expected to experience reduced survival due to freshwater impacts from the large 2010 brood year escapement. Given the age of maturity of Scotch is predominantly four year olds, five year olds are expected to contribute a small proportion to the 2017 returns. This proportion will be further reduced since the 2012 cycle is the weak cycle line for Seymour and the 2012 brood year escapement (300 EFS) was much smaller than the cycle average (3,800 EFS).</p> <p>This combined stock group is the Shuswap-ES CU, which is in the Amber/Green WSP status zone. <i>(2016 Outlook Category was 2)</i></p>
<p>5. Early Summer – Mid & Upper Fraser</p> <p>(CUs: Anderson- Seton-ES; Nadina-Francois- ES (new mixed); Bowron-ES; Taseko-ES)</p>	<p>3/3/1/1 (Note: three of the four CUs are in the Red WSP status zone)</p>	<p>Gates (Anderson-Seton-ES): The 2017 return for Gates is expected to be similar to the cycle average of 46,000 (1973-2013). The 2013 brood year escapement for Gates (23,100 EFS) was more than four times larger than the cycle average (5,600 EFS); however, Gates is expected to experience reduced survival due to freshwater impacts from the large 2011 brood year escapement. Given the age of maturity of Gates is predominantly four year olds, five year olds are expected to contribute little to the 2017 returns. The 2012 brood year escapement for Gates (6,900 EFS) was smaller than the cycle average (9,000 EFS). This CU is in the Amber WSP status zone. The individual 2017 Outlook Category is 3. <i>(2016 Outlook Category was 3)</i></p> <p>Nadina (Nadina-Francois-ES): Average returns are expected in 2017 relative to the cycle average of 67,000 (1981-2013). The 2013 brood year escapement for Nadina (7,100 EFS) was similar to the cycle average (8,300 EFS). Given the age of maturity of Nadina is predominantly four year olds, five year olds are expected to contribute little to the 2017 returns. The 2012 brood year escapement for Nadina (16,800 EFS) was slightly larger than the cycle average (13,700 EFS). This CU is in the Red WSP status zone. The individual 2017 Outlook Category is 3. <i>(2016 Outlook Category was 3)</i></p> <p>Bowron (Bowron-ES): Below average returns are expected in 2017 relative to the cycle average of 23,000 (1953-2013). The 2013 brood year escapement for Bowron (1,900 EFS) fell below the cycle average (2,800 EFS). Given the age of maturity of Bowron is predominantly four year olds, five year olds are expected to contribute little to the 2017 returns. This proportion will be further reduced since the 2012 brood year escapement for Bowron (30 EFS) was the smallest escapement on record for this stock, falling well below the cycle average (3,500 EFS). This CU is in the Red WSP status zone. The individual 2017 Outlook Category is 1. <i>(2016 Outlook Category was 1)</i></p> <p>Taseko (Taseko-ES): Return data are not available for this CU; only escapements can be compared to the time series average. The brood year</p>

Outlook Unit Sockeye	2017 Outlook Category	Comments
		escapement index for Taseko (90 EFS) was one tenth of the average of 900 EFS (1994-2010); note that Taseko escapement assessments are an index of abundance only. This CU is in the Red WSP status zone. The individual 2017 Outlook Category is 1. <i>(2016 Outlook Category was 1)</i>
6. Early Summer – Lower Fraser (CU: Pitt-ES; Chilliwack-ES; Nahatlach-ES)	3/2/1	<p>Pitt (Pitt-ES): Average returns are expected in 2017 relative to the average across cycles of 71,000 (1953-2013) despite above average escapements in both the four and five year old brood years (2012 and 2013 respectively). Pitt has a higher proportion of five year old recruits (~70%) relative to four year old recruits. The 2012 brood year escapement (five year old returns) for Pitt (41,400 EFS) was almost three times the average across cycles (14,900 EFS). The 2013 brood year escapement (four year old returns) for Pitt (35,900 EFS) was more than double the average across cycles (14,900 EFS). This CU is in the Amber/Green WSP status zone. The individual 2017 Outlook Category is 3. <i>(2016 Outlook Category was 3)</i></p> <p>Chilliwack Lake/Dolly Varden Creek and Nahatlatch Lake/River: Return data are not available for the two CUs in this Outlook Unit; only escapements can be compared to time series averages.</p> <p>Chilliwack Lake/Dolly Varden Creek (Chilliwack-ES) brood year escapement in 2013 (5,400 EFS) was smaller than the recent time series average (10,500 EFS) from 2002-2015 across all cycles when both sites (river and lake) were assessed. Conversely, the 2012 brood year escapement (78,800 EFS) was the largest escapement on record for this miscellaneous group. This CU is in the Red/Amber WSP status zone. The individual 2017 Outlook Category is 2. <i>(2016 Outlook Category was 3)</i></p> <p>Nahatlatch Lake/River (Nahatlach-ES) brood year escapement (800 EFS) was half the cycle average from 1976 to 2013 (1,500 EFS). Similarly, the 2012 brood year escapement was small (1,100 EFS). This CU is in the Red WSP status zone. The individual 2017 Outlook Category is 1. <i>(2016 Outlook Category was 1)</i></p>
7. Summer – Chilko (CUs: Chilko-S; Chilko-ES)	4	Above average returns are expected in 2017 relative to the cycle average of 881881,000 (1953-2015). Escapement in the 2013 brood year (624,500 EFS) was four times larger than the cycle average (154,100 EFS) for Chilko (Chilko-S/Chilko-ES). Chilko freshwater survival is not available for the 2013 brood year (a smolt assessment program could not be conducted in 2015 due to high water levels). Given the age of maturity of Chilko is predominantly four year olds, five year olds are expected to contribute little to the 2017 returns. Further, escapement in the 2012 brood year (90,800 EFS) was less than half the cycle average (252,800 EFS). This CU is in the Green WSP status zone. <i>(2016 Outlook Category was 3)</i>
8. Summer – Late Stuart (CUs: Takla- Trembleur- Stuart-S)	2	Below average returns are expected in 2017 relative to the cycle average of 1.66 M (1953-2013). Although the 2013 cycle is the dominant cycle line for Late Stuart (Takla-Trembleur-Stuart-S), the escapement in 2013 (70,900 EFS) was less than half the cycle average (218,000 EFS). Given the age of maturity of Late Stuart is predominantly four year olds, five year olds are expected to contribute little to the 2017 returns. The 2012 brood year escapement for Late Stuart (31,800 EFS) was similar to the cycle average (26,000 EFS). This CU is in the Red/Amber WSP status zone. <i>(2016 Outlook Category was 2)</i>

Outlook Unit Sockeye	2017 Outlook Category	Comments
9. Summer – Nechako (CU: Francois-Fraser-S)	4	Above average returns are expected in 2017 relative to the cycle average of 241241,000 (1953-2013). The 2013 brood year escapement for Nechako (Francois-Fraser-S) (54,100 EFS) was larger than the cycle average (30,500 EFS). Given the age of maturity of Nechako is predominantly four year olds, five year olds are expected to contribute little to the 2017 returns. The 2012 brood year escapement for Stellako (50,600 EFS) was similar to the cycle average (61,500 EFS). This CU is in the Red/Amber WSP status zone (2016 Outlook Category was 3)
10. Summer – Quesnel (CU: Quesnel-S)	2	Well below average returns are expected in 2017 relative to the cycle average of 3.7 million (1953-2013). Although the 2013 cycle is the dominant cycle line for Quesnel (Quesnel-S), the escapement in 2013 (96,100 EFS) was much smaller than the cycle average (450,000). Given the age of maturity of Quesnel is predominantly four year olds, five year olds are expected to contribute little to the 2017 returns. Further, the 2012 brood year escapement for Quesnel (100 EFS) was extremely small, and fell well below the cycle average (4,500). This CU is in the Red/Amber WSP status zone (2016 Outlook Category was 1.)
94. Summer- Harrison (CU: Harrison-River Type)	4	This CU was moved from the Fall to the Summer management group in 2012. Above average returns are expected in 2017 relative to the average across cycles of 130,000 (1953-2014). Given the exceptional escapements for the Harrison (Harrison river-type) stock in the past decade, the increases in productivity, and the extreme variations in age of maturity, predictions of returns are extremely uncertain. Both 2013 escapement (78,000 EFS) (age-4 recruits in 2017) and 2014 escapement (238,400 EFS) (age-3 recruits in 2017) at Harrison were higher than the long-term average for this stock (26,300 EFS). This CU is in the Green WSP status zone (2016 Outlook Category was 3)
95. Summer-Raft (CU: Kamloops-ES)	3	<p>This CU was moved from the Early Summer to the Summer management group in 2012. Average returns are expected in 2017 relative to the cycle average of 26,000 (1953-2013). The 2013 brood year escapement for Raft (Kamloops-ES) (9,000 EFS) was larger than the cycle average (4,400 EFS). Given the age of maturity of Raft is predominantly four year olds, five year olds are expected to contribute little to the 2017 returns. Further, the 2012 brood year escapement for Raft (1,700 EFS) was much smaller than the cycle average (6,600 EFS). (2016 Outlook Category was 2)</p> <p>North Thompson River and its tributaries do not have return data; only escapements can be compared to the time series average. The brood year escapement for North Thompson River (8,500 EFS) was above average of 1,900 (1953-2013). This was not included in previous year's reports and is part of the Kamloops-ES CU.</p> <p>This CU is in the Amber WSP status zone.</p>
11. Fall – Cultus (CU: Cultus-L)	1	Very low returns are expected in 2017 relative to the cycle average of 14,000 (1953-2013). Juvenile production of 110,000 smolts (41% hatchery marked) fell well below the long-term cycle average (1953-2013 cycle average: 254,000 smolts), though it was somewhat similar to the post-1980 average (1989-2013 cycle average: 89,700 smolts). Given the age of maturity of Cultus is predominantly four year olds, five year olds are expected to contribute little to the 2017 returns. This CU is in the Red WSP status zone. (2016 Outlook Category was 1)

Outlook Unit Sockeye	2017 Outlook Category	Comments
12. Fall – Portage (CU: Seton-L)	1	Average returns are expected in 2017 relative to the cycle average of 45,000 (1961-2013). The 2013 brood year escapement for Portage (4,200 EFS) was larger than the cycle average (2,900 EFS). Given the age of maturity of Portage is predominantly four year olds, five year olds are expected to contribute little to the 2017 returns. Further, the 2012 brood year escapement for Portage (13 EFS) was extremely small, falling well below the cycle average (600 EFS). Escapements in Portage have been consistently declining on the 2012 cycle line for the past two cycles, and the 2012 escapement was the smallest observed on this cycle since the population was restored with hatchery transplants in the 1960's. Although this CU's WSP status is formally undetermined, recent data across all metrics indicate that this CU is in the Red WSP status zone (<i>2016 Outlook Category was 1</i>)
13. Fall – South Thompson (CU: Shuswap-L)	3	The 2017 return for the South Thompson is expected to be similar to the cycle average of 200,000 (1953-2013). The 2013 brood year escapement for the South Thompson (87,900 EFS) was almost ten times larger than the cycle average (8,800); however, South Thompson is expected to experience reduced survival due to freshwater impacts from the large 2010 brood year escapement. Given the age of maturity of the South Thompson is predominantly four year olds, five year olds are expected to contribute little to the 2017 returns. Further, the 2012 brood year escapement the South Thompson (6 EFS) was the smallest on record across all cycles, falling well below the cycle average (2,800), and is not expected to contribute much to the 2017 return. This CU is in the Green WSP status zone. (<i>2016 Outlook Category was 1</i>)
14. Fall – Birkenhead (CU: Lillooet-Harrison-L)	3	Average returns are expected in 2017 relative to the cycle average of 296,000 (1953-2013). The 2013 brood year escapement for Birkenhead (46,800 EFS) was much larger than the cycle average (29,500 EFS). Five year olds are expected to contribute little to the 2017 returns as the 2012 brood year escapement for Birkenhead (2,500 EFS) was much smaller than the cycle average (32,300 EFS), and was the smallest escapement on record for this stock. This CU is in the Green WSP status zone. (<i>2016 Outlook Category was 2</i>)
15. Fall – Lower Fraser CUs: Harrison (U/S)-L; Harrison (D/S)-L; Harrison (River-Type); Widgeon (River-Type)	2/1	Weaver (including miscellaneous Harrison Lake-rearing stocks): Average returns are expected in 2017 relative to the cycle average of 282,000 (1973-2013). The 2013 brood year escapement for Weaver (15,500 EFS) was smaller than the cycle average for this stock (20,400 EFS); however, early freshwater survival (2,200 fry/EFS) was above average (1,600 fry/EFS). Given the age of maturity of Weaver is predominantly four year olds, five year olds are expected to contribute little to the 2017 returns. Further, the 2012 brood year escapement for Weaver (400 EFS) was the smallest escapement on record for this stock, falling well below the cycle average (18,300 EFS). Although this CU was in the WSP Amber zone, extremely poor escapements in recent years have resulted in Red status across all metrics. Individual 2017 Outlook Category is 2. (<i>2016 Outlook Category was 1</i>) Widgeon Creek: CU return data are not available; instead, escapements are compared to time series averages. Brood year escapement (700 EFS) was similar to the average across cycles from 1950 to 2013(600 EFS). Individual 2017 Outlook Category is 1. (<i>2016 Outlook Category was 1</i>)

Outlook Unit Sockeye	2017 Outlook Category	Comments
16. Somass	2	After abundant returns of 2015 and 2016, expectations for the 2017 Somass sockeye return are much lower. Sockeye produced from brood years 2012 to 2014 will return in 2017. Model forecasts for the Somass return range from a low of about 136,000 (SStM) to a high of about 511,000 (CLI Forecast Model). The ‘sibling model’ forecast return for 2017 is 172,000 (low category). On average, this model has performed the best in recent years and is used in 2017 for the basis of management planning. Inseason (July 20) update has upgraded the return to 375,000. <i>(2016 Outlook Category was 4)</i>
17. Henderson	2	Statistical forecast models for Henderson sockeye are currently not generated due to data limitations. An outlook is produced based on spawner and smolt abundance for the contributing brood years and trends in indicators related to marine survival rate. Based on these observations, the management outlook for Henderson sockeye in the “very low zone” for harvest management, corresponding to an expected return of less than 15,000 adult fish. No update as of July 20, 2017. <i>(2016 Outlook Category was 2)</i>
18. WCVI - Other	2	Assessment data are not available to forecast others systems. However, WCVI populations tend to covary. Therefore, expectations are for lower returns similar to Somass and Henderson. <i>(2016 Outlook Category was 2/3)</i>
19. Areas 11 to 13	2/3	Preliminary sockeye returns in 2016 to the Nimpkish River (Area 12) were above average with returns greater than the 2012 brood year. The assessment of the escapement data associated with the Quaste River (Area 12) has not yet been completed, but indications are for below average return abundance. Preliminary 2016 sockeye returns in Area 13, specifically the Phillips River, were average. The only indication of marine survival comes from decreased returns of local pink and coho salmon in 2016 (same 2015 outmigration year as the sockeye). Consequently, the above average brood and potential for reduced marine survival conditions result in an outlook that is low to near target. <i>(2016 Outlook Category was 2/3)</i>
20. Sakinaw	1	171 adult and 1 jack sockeye were enumerated in 2016, coming from a smolt count of 126,000 in 2014. The marine survival of smolt to escaping adult is only 0.1% for hatchery origin and 0.6% for wild origin smolts indicating a continuation of poor marine survivals. This return is mostly comprised of progeny from captive brood, held at Rosewall and Ouillette hatcheries, and a small number of natural origin sockeye. The expectation for 2017 is for a very low number of adults (<100) due to fewer smolts observed in 2015 (17,000). <i>(2016 Outlook Category was 1)</i>
21. Areas 7 to 10	1/4	Area 8 sockeye returns are expected to be very poor based on very low brood year escapements and continuing poor return rates. Areas 9 and 10 five year old returns from the strong 2011 escapement were very good to both Smith and Rivers Inlets in 2016. 2017 returns/expectations are uncertain at this time. <i>(2016 Outlook Category was 1/4)</i>
22. Coastal Areas 3 to 6	2/4	Status is uncertain. Indications are escapements are improving in the last cycle. Limited assessment data for evaluation. <i>(2016 Outlook Category was 2/4)</i>
23. Babine Lake - Enhanced	4	Poor abundance forecast in 2017 for age-5 sockeye based on 2016 age 4 returns. Poor age 4 returns expected in 2017 based on very low age-3 returns in 2016. Expecting a record low return in 2017, similar to 2013. <i>(2016 Outlook Category was 4)</i>

Outlook Unit Sockeye	2017 Outlook Category	Comments
24. Skeena - Wild	1/4	Expect poor survival for sockeye that went to sea in 2014 (returning as 5 year olds in 2017). The survival for sockeye that went to sea in 2015 (returning as 4 year olds in 2017) is also expected to be poor based on the poor 2016 jack sockeye return to Babine. Return rates have become more uncertain in recent years, with greater variability among the Skeena stock components. <i>(2016 Outlook Category was 1/4)</i>
25. Nass	3/4	Average to below average returns are expected. Kwinageese returns in 2016 were improved <i>(2016 Outlook Category was 1/4.)</i>
26. Haida Gwaii	2/4	Status uncertain for some systems; limited assessment work indicates improved returns over the last cycle. <i>(2016 Outlook Category was 2/4)</i>
27. Alsek	3	Based on brood year escapements outside (above) of the MSY target range and stock-recruitment relations from historical records, an average run is expected. <i>(2016 Outlook Category was 3)</i>
28. Stikine - Wild	4	Stikine sockeye production has varied widely since 1985. Low production periods occurred in the mid-1980s to early 1990s. From 2003 through 2006 production improved, believed due to improved marine survival. Returns since 2007- 2014 were below forecast and in 2015 and 2016 returns exceeded forecasts. An above-average run is anticipated for 2017. <i>(2016 Outlook Category was 3)</i>
29. Taku - Wild	4	The 2016 run was above average with record returns in some systems. The 2017 S/R based forecast of 198,000 is above the 10 year average of 176,000 and well over the escapement point-goal of 75,000. <i>(2016 Outlook Category was 3)</i>
Chinook		
96. Fraser River Spring Run 4 ₂	1	Expectations for 2017 are for continued depressed abundance due to low parental escapements in 2013 and ongoing unfavorable and highly variable marine survival conditions. Escapements in 2016 declined compared to the parent brood escapements in 2012. <i>(2016 Outlook Category was 2)</i>
97. Fraser River Spring Run 5 ₂	1	Expectations are for continued overall low abundance related to depressed parental escapements and continuing unfavorable and highly variable marine survival conditions. Escapements in 2016 were variable, but on average, almost attained the parental brood escapement level. <i>(2016 Outlook Category was 2)</i>
98. Fraser River Summer Run 5 ₂	1	Expectations are for continued overall low abundance in 2017, related to ongoing depressed parental abundance and unfavorable and highly variable marine survival conditions. Escapements in 2016 were the lowest on record since 1979. <i>(2016 Outlook Category was 2)</i>
99. Fraser River Summer Run 4 ₁	2	Instability in smolt to adult survival rates, combined with highly variable escapements temper the outlook for this aggregate. If marine survival conditions improve, abundance in 2017 may exceed 120,000, however, CWT survival indications for smolts from 2013 brood year are very poor. Escapements in 2016 improved above parental levels in 2012, but were still below recent 10 year average of ~110,000. <i>(2016 Outlook Category was 2)</i>

Outlook Unit Chinook	2017 Outlook Category	Comments
100. Fraser River Fall Run 4 ₁	2/4	<p>Current marine conditions are appear unfavorable, thus expectations for escapements in 2017 are highly uncertain, and are tempered by the low parental brood escapement in 2013. The forecast for 2017 is ~64,500, below the lower bound of the escapement target (75,100). Escapement in 2016 was estimated at ~41,300, slightly less than the parental escapement of ~44,500 observed in 2012. <i>(2016 Outlook Category was 2)</i></p> <p>Although there are significant hatchery releases in several Lower Fraser tributaries, lower Fraser River fall-run hatchery chinook consists mainly of Chilliwack Hatchery releases. 2016 adult escapement at Chilliwack was estimated to be ~34,400. The forecasted return for 2017 is ~43,100. <i>(2016 Outlook Category was 2)</i></p> <p>Outlook for the Harrison wild stock is 2; Outlook for the Chilliwack hatchery stock is 4 once they are in the terminal area and separate from the Harrison.</p>
39. WCVI - Hatchery	3	<p>After ocean fisheries, the 2017 forecast return of Stamp/RCH adult chinook to the terminal area of Barkley Sound and Alberni Inlet is about 79,000 (range 58,000 to 100,000). Terminal returns of other WCVI stocks are also forecast to be moderately abundant in 2017. The forecast of aggregate terminal abundance (sum of all hatchery and wild indicator stocks) is 157,000, near the long term average of 152,000 (1980 to 2016). The overall expected age composition of the WCVI aggregate terminal run is 41% age-3, 40% age-4, and 19% age-5, with an expected sex ratio of 45% female. <i>(2016 Outlook Category was 3)</i></p>
40. WCVI-Wild	1	<p>Some modest increase in the escapement of wild populations has been observed over the last 3 years and this improvement is expected to be maintained in 2017. However, spawner levels in the SWVI CU remain below upper biological benchmarks with fewer than 100 spawners observed in some rivers in recent years. Therefore, wild WCVI chinook remains a stock of concern. <i>(2016 Outlook Category was 1)</i></p>
41. Johnstone Strait Area (including mainland inlets)	2/3	<p>Escapement monitoring on the Campbell/Quinsam system is ongoing and has been heavily impacted by high river levels this year; however preliminary information suggests an improvement over the last few years, and a return similar or better than the 10-yr average for this hatchery indicator. Early results show the enhanced population of the Phillips River produced another strong return; similar to the past few years, and well above its historic average. Outlook is similar to recent years with wild stocks at low level (category 2) and hatchery stocks likely near target (category 3). <i>(2016 Outlook Category was 2/3)</i></p>
42. Georgia Strait Fall (wild and small hatchery operations)	2/3	<p>The 2016 return to Cowichan was higher than the previous year suggesting that the rebuilding is continuing and may reach the 6500 target (MSY). Above average jack returns in 2016 suggest potential improvement in 2017 age 3 returns. For Nanaimo, 2016 returns were lower than the 1 and 3 generational averages; indicating that this stock is low and stable. <i>(2016 Outlook Category was 2/3)</i></p>
43. Georgia Strait Fall (large hatchery operations)	2	<p>Returns in 2016 to rivers with major hatcheries (Big Qualicum, Little Qualicum and Puntledge) are higher than previous year's (2015) returns and have been low but stable over the last 10 years. <i>(2016 Outlook Category was 2)</i></p>
44. Georgia Strait Spring and Summer	2	<p>Nanaimo spring and summer chinook were not monitored in 2016. Returns of summer run chinook to the Puntledge hatchery are similar to the 1 and 3 generational average and below target escapements. Rebuilding efforts are continuing. The summer run in Cowichan River was monitored in 2016 and preliminary results indicate a run of ~200 adults. <i>(2016 Outlook Category was 2)</i></p>

Outlook Unit Chinook	2017 Outlook Category	Comments
45. Areas 7 and 8	3/4	2017 Bella Coola returns are expected to be above average based on the record 2015 and above average 2016 returns. <i>(2016 Outlook Category was 3/4)</i>
46. Areas 9 and 10	2/4	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 based on recent trends. <i>(2016 Outlook Category was 2/4)</i>
47. Coastal Areas 3 to 6	2/3	Stocks are generally depressed and variable and this pattern is expected to continue. Assessments are of poor quality. <i>(2016 Outlook Category was 2/3)</i>
48. Nass	3/4	Recent average return expected. <i>(2016 Outlook Category was 3/4)</i>
49. Haida Gwaii	ND	No recent assessments of Yakoun chinook. <i>(2016 Outlook Category was ND)</i>
50. Skeena	2/4	Recent average or below average returns expected to summer run stocks. Spring run stocks are expected to be below average. <i>(2016 Outlook Category was 2/4)</i>
51. Alsek	2/3	Based on brood year escapements outside (above and below) of the MSY target range and a below forecast return in 2016, a below average run is expected. <i>(2016 Outlook Category was 3)</i>
52. Stikine	2	The Transboundary Technical Committee used a sibling based forecast model to generate a forecast estimate of 24,734 Chinook. When a factor is applied to account for recent forecast errors the estimate is reduced to 18,300. Below the 10yr average of 24,900 but within the escapement goal range of 14,000 – 28,000. This run size does not provide for directed fisheries. <i>(2016 Outlook Category was 2)</i>
53. Taku	2	The Transboundary Technical Committee used a sibling based forecast model to generate a forecast estimate of 18,100 Chinook. When a factor is applied to account for recent forecast errors the estimate is reduced to 13,300. Below the 10yr average of 26,900 and below the escapement goal range of 19,000-36,000. This run size does not provide for directed fisheries. <i>(2016 Outlook Category was 2)</i>
54. Yukon	2	The Canadian-origin return of Yukon River Chinook salmon in 2017 is anticipated to be below the long-term average of ~80,000 fish. The current spawning escapement goal endorsed by the U.S. / Canada Yukon River Panel is 42,500 to 55,000 Chinook salmon and has been met only 50% of the time over the last decade. 5 and 6 year-old fish dominate returns. Production resulting from an average spawning escapement in 2011 (46,300 spawners, 47% female) is anticipated to lead to a normal return of 6 year olds, while a below average escapement in 2012 (32,700, 51% female) is likely to lead to a below average return of 5 year olds. Total production observed in Canadian-origin Yukon River Chinook salmon stocks is well below levels observed in the 1980s and 1990s. Run sizes have averaged around 75,000 in the last ten years compared to 150,000 in the 1980s and 1990s. If conditions leading to poor production continue, fishing opportunities may again be limited in 2017. <i>(2016 Outlook Category was 2)</i>
Coho		
55. Mid and Upper - Fraser	2	The forecast model selected for the 2017 return is the 3 Year Average model, which is a return back from last year when the Like Last Year model was used. This change was based on the retrospective performance analysis of each model which showed the 3YRA model as having the lowest Mean Annual Percent Error (MAPE). The 2017 forecast of abundance for the Interior Fraser Aggregate is 31,212 coho with a 50% forecast range: 19,309 to 50,453. <i>(2016 Outlook Category was 1)</i>

Outlook Unit Chinook	2017 Outlook Category	Comments
56. Thompson	2	The forecast model selected for the 2017 return is the 3 Year Average model, which is a return back from last year when the Like Last Year model was used. This change was based on the retrospective performance analysis of each model which showed the 3YRA model as having the lowest Mean Annual Percent Error (MAPE). The 2017 forecast for Upper Thompson Aggregate is 24,752 with a range of 15,119 to 40,525. <i>(2016 Outlook Category was 1)</i>
57. Lower Fraser	1	Fall/winter 2016/2017 escapement surveys are complete and escapements were modest in the streams surveyed. The outlook for 2017 is for continued low abundance due to current marine conditions. Sustained improvement in marine conditions will be required to improve outlook. The forecast of smolt-adult marine survival for 2017 is 1.2%. <i>(2016 Outlook Category was 1)</i>
58. WCVI	2/3	In developing the 2017 forecast for the Robertson (Stamp) Indicator, the North Pacific Gyre Oscillation index was found to have superior predictive power over the other models and indices. For the Carnation Wild Indicator, the 3 Year Average was found to have the best predictive power. The 2017 marine survivals are forecast to decrease to 6.2% (Robertson) and 0.8% (Carnation) from the 2016 observed values. <i>(2016 Outlook Category was 2/3)</i>
59. Area 12	2/3	The 2017 Area 12 and 13 forecasts are lower than the brood returns in 2014. The Area 12 and 13 forecasts are respectively 37% and 40% lower than the 2014 observed indices. Coho abundance in this region is varied and can be characterized as 'average' for Area 12 stocks and 'below average' for Area 13 stocks. See Simpson et al., 2004 for description of characterizations. Smolt production in 2016 was well above average for Keogh River (92,000). Keep in mind that these more recent year returns do not have the high levels of exploitation as in the past and these forecasts are highly uncertain. <i>(2016 Outlook Category was 2/3)</i>
60. Area 13 - North	2/3	The Hatchery indicators for the Georgia Basin west management unit are Quinsam and Big Qualicum Hatcheries and the Wild indicator is Black Creek. In 2015 the smolt production at Black Creek (24,000) was well below average. In 2016 the reported proportion of coded-wire tagged coho adults from Black Creek was extremely low, much lower than expected, suggesting that there was a technical or operational problem with detecting tags. As a result, the time series of the Black Creek Indicator could not be updated and the performance of the forecast model could not be run. For the 2017 forecast for this Indicator, the model used for the 2016 forecast (3 Year Average) will be used. The LLY model (Like Last Year) was not considered due to the absent data for 2016. <i>(2016 Outlook Category was 2/3)</i>
61. Georgia Strait	2	The best performing model for the Big Qualicum Hatchery indicator is the Growth Model. For the Quinsam Hatchery and the Black Creek Wild indicator the North Pacific Gyre Oscillation index was used as the preferred model from the 2016 forecast. The 2017 forecast for the Quinsam and Big Qualicum Hatchery indicators is for a decrease from the 2016 levels, to 0.8% and 0.4% marine survival, respectively. The Black Creek wild indicator forecast is 0.7% marine survival. <i>(2016 Outlook Category was 2)</i>
62. Areas 7 to 10	ND	Information not yet available. Returns are uncertain and depend on the survivals of the juveniles that went to sea in 2016. <i>(2016 Outlook Category was 3/4)</i>
63. Areas 5 and 6	ND	Returns are uncertain and depend on the survivals of the juveniles that went to sea in 2016. No assessment in 2016. <i>(2016 Outlook Category was 3/4)</i>

Outlook Unit Chinook	2017 Outlook Category	Comments
64. Area 3	4	Average returns are expected, but depend on the survivals of the juveniles that went to sea in 2016. <i>(2016 Outlook Category was 4)</i>
65. Haida Gwaii -E (Area 2 East)	4	Limited assessments since 2002. Recent returns have been good. <i>(2016 Outlook Category was 4)</i>
66. Haida Gwaii -N (Area 1)	ND	No recent assessments. <i>(2016 Outlook Category was ND)</i>
67. Haida Gwaii -W (Area 2 West)	ND	No recent assessments. <i>(2016 Outlook Category was ND)</i>
68. Skeena	4	Recent returns have been good except unknown for lower Skeena tributaries. Returns are uncertain and depend on the survivals of the juveniles that went to sea in 2016. <i>(2016 Outlook Category was 4)</i>
69. Skeena – High Interior	4	Recent returns have been good. Returns are uncertain and depend on the survivals of the juveniles that went to sea in 2016. <i>(2016 Outlook Category was 4)</i>
70. Alsek	3	Only a partial weir count is carried out. Brood year counts were above average. <i>(2016 Outlook Category was 3)</i>
71. Stikine	ND	Reliable brood year escapement data are limited and ancillary observations are sometimes contradictory. <i>(2016 Outlook Category was 3)</i>
72. Taku	3	Based on preliminary smolt abundance in 2016 combined with recent smolt-to-adult survival rates, an average run is expected for 2017. It is anticipated that the run will be sufficient for directed harvest levels comparable to recent years. <i>(2016 Outlook Category was 3)</i>
73. Yukon	ND	Very little is known about coho salmon stock status within Canadian portions of the Yukon River drainage. Data from the U.S. portion of the drainage indicate returns to the drainage in the last five years have been near the long term average. No assessment programs are currently undertaken in Canada and the current stock status is unknown. <i>(2016 Outlook Category was ND)</i>
Pink		
74. Fraser - Odd only(CU: Fraser River)	3	Below average returns are expected in 2017 relative to the average of 13.4 million (1959-2013). The 2015 brood year fry abundance for Fraser Pink Salmon (230 million) was half of the long-term average of 450 million fry (1975-2013). This CU is comprised of 100% two year olds. <i>(2015 Outlook Category was 4; 2016 Outlook Category was ND)</i>
75. Squamish - Odd only (CUs: East Howe Sound- Burrard Inlet; and, Georgia Strait)	ND	Squamish Pink salmon are rebuilding; however, no target run size has been developed and available quantitative assessment information has not been assessed. <i>(2015 Outlook Category was ND; 2016 Outlook Category was ND)</i>
76. WCVI - Odd & Even	ND	No quantitative assessment information is available. <i>(2015 Outlook Category was ND; 2016 Outlook Category was ND)</i>

Outlook Unit Pink	2017 Outlook Category	Comments
77. Areas 11 to 13 - Odd & Even	2/3	<p>Since 2015, assessment information on pink salmon in this area is limited. Even Year: Preliminary information in 2016 for the dominant cycle returns showed a significant decline in abundance over an improving trend over the last 3 return years.</p> <p>Odd Year: Indications in 2015 were that returns to the area were below average. Prior to that we had seen an improving trend in the odd cycle returns to this area. With the indications of poor marine survival in the 2016 returns and the below average brood year returns in 2015, expectations are for below to near target returns in 2017. Historically pink returns to this area have been highly variable and expectations are highly uncertain.</p> <p><i>(2015 Outlook Category was 3; 2016 Outlook Category was 2/3)</i></p>
78. Georgia Strait - West - Odd & Even	2/3	<p>Preliminary information suggests returns in 2016 were lower than brood returns in 2014. With the indications of poor marine survival in the 2016 pink returns and the well above average brood year returns in 2015, expectations are for below to near target returns in 2017.</p> <p><i>(2015 Outlook Category was 2; 2016 Outlook Category was 2)</i></p>
79. Georgia Strait - East - Odd & Even	2/3	<p>Assessment information on pink salmon in this area is limited. With 2016 being an off-year for this stock grouping returns have been very low, as expected. With the large escapement in 2015, the expectation is that returns in 2017 will be higher than average.</p> <p><i>(2015 Outlook Category was 2; 2016 Outlook Category was 2/3)</i></p>
80. Areas 7 to 10 - Odd & Even	1/4	<p>Outlook coming.</p> <p><i>(2015 Outlook Category was 2/3; 2016 Outlook Category was 3/4)</i></p>
81. North Coast Areas 3 to 6 - Odd & Even	4	<p>Outlook coming. Returns are highly dependent on pink return rates.</p> <p><i>(2015 Outlook Category was 3/4; 2016 Outlook Category was 4.)</i></p>
82. Haida Gwaii - Odd & Even	3/4	<p>Odd year pink stock. Outlook coming. <i>(2015 Outlook Category was 3/4; 2016 Outlook Category was NA.)</i></p>
Chum		
83. Fraser River (CUs: Fraser Canyon and Lower Fraser)	3	<p>Fraser Chum salmon escapement trended downward from 1998 to 2010. The escapement decline was halted and reversed with an estimated 1.1 million spawners reported in 2011. Spawning escapement has remained stable through 2015 (2012-2015 estimated escapement averaged 1.1 million spawners). The spawning escapement goal for Fraser Chum is 800,000 spawners. Returns in 2017 will be based largely on the brood from the 2013 escapement of 980,000 spawners and is estimated at 1.9 million. <i>(2016 Outlook Category was 4)</i></p>
84. WCVI	2/3	<p>Similar to WCVI chinook, overall returns of WCVI chum in 2017 will likely decline relative to levels observed in 2016. Observed returns of earlier age classes and ocean and leading species indicators of marine survival rate for the 2013 and 2014 brood years are low. In contrast, the survival rate 2012 brood year was high and produced most of the abundant return observed in 2016. Therefore a relatively abundant return of the 5-year old age class is expected in some areas such as Nitinat or Nootka. In other WCVI areas, chum populations have been relatively depressed in recent years. <i>(2016 Outlook Category was 2/3)</i></p>

Outlook Unit Chum	2017 Outlook Category	Comments
85. Johnstone Strait Area and Mainland Inlets (Areas 11 to 13)	3	Returns in 2016 are still being assessed; however abundance appears to be well above average and above target in most systems surveyed. A strong 4 year old age class was evident this year coming from the average 2012 brood year and 2013 ocean entry. Expectations for 2017 are near target. This is based on the strong parental brood abundances in 2013 (ocean entry 2014 and age 4 in 2017) with below average returns in 2014 (ocean entry 2015 - age 3 in 2017). Marine survival will likely decline from the good survival of ocean entry 2013; poor marine condition in 2014 and 2015 (poor pink and coho returns to the local area in both 2015 and 2016). Expect more variability in chum returns. Summer chum stocks in 2016 appear to have done well but were mainly below average throughout the area and will likely stay the same in 2017. <i>(2016 Outlook Category was 3)</i>
86. Georgia Strait	3	Preliminary escapement enumeration data for 2016 indicate higher abundances and above target escapements. For 2017, returns are expected to be lower than 2016 for the Cowichan, Goldstream and Jervis Inlet stocks, and similar for the Nanaimo and Mid-Island stocks, based on brood year escapement in 2013. <i>(2016 Outlook Category was 3)</i>
87. Coastal Areas 5 & 6	1/4	Modest 2013 brood year escapement. Poor chum returns in recent years but improved in 2016. Kitimat enhanced return strength uncertain; depends on ocean survivals. <i>(2016 Outlook Category was 1/4)</i>
88. Haida Gwaii	2/4	Outlook coming. Generally poor brood year escapements indicate poor returns. <i>(2016 Outlook Category was 2/4)</i>
89. Skeena-Nass	1/2	Ongoing poor returns expected from very poor brood year escapements, although 2016 escapements were improved relative to recent years <i>(2016 Outlook Category was 1/2)</i>
90. Areas 7 to 10	3/4	Wild brood year escapements were generally good. Returns of enhanced stocks are dependent upon ocean survival which has been highly variable in recent years. <i>(2016 Outlook Category was 3/4.)</i>
91. Yukon (mainstem)	3	The Yukon River (mainstem) chum salmon outlook group includes all (Canadian) upper Yukon River stocks outside of the Porcupine River drainage. The current spawning escapement goal endorsed by the U.S. / Canada Yukon River Panel is 70,000 to 104,000 chum salmon and the goal has consistently been met since the early 2000s. Escapements in 2012 and 2013, the principal brood years (5 and 4 year-olds) for the 2017 run, were well above the minimum goal. An above-average run is expected in 2017. <i>(2016 Outlook Category was 3.)</i>
92. Yukon (Porcupine)	2	The current spawning escapement goal for the Porcupine River (as assessed at the Fishing Branch River) endorsed by the U.S. / Canada Yukon River Panel is 22,000 to 49,000 chum salmon. Returns over the last five years have been well below expected and the minimum escapement goal was not achieved in several of these years. Escapements in 2012 and 2013, the principal brood years (5 and 4 year-olds) contributing to the 2017 run, were weak at 22,399 and 25,376 respectively. If conditions contributing to the weak returns persist, a poor run is again expected in 2017 and fishing opportunities could be restricted. <i>(2016 Outlook Category was 2.)</i>
93. Taku	2	Ancillary observations suggest that escapements have been relatively low since 1991, but no scientifically defensible estimates are available. The in-river run abundance index for the primary brood year was below average. Non-retention provisions are expected to continue. <i>(2016 Outlook Category was 2.)</i>

Appendix 1. Outlook Units and associated Conservation Units. Where the WSP Status column is blank, a Wild Salmon Policy status classification is not available for that Conservation Unit.

No.	Outlook Unit Name	Conservation Unit
Sockeye (sockeye CU types: SEL = lake type, SER = river type)		
1	Okanagan	SEL::Osoyoos
2	Early Stuart	SEL::Takla/Trembleur-Early Stuart timing
3	Early Summer - North Thompson	SEL::North Barriere-Early Summer timing
4	Early Summer - South Thompson	SEL::Shuswap-Early Summer timing
5	Early Summer - Mid and Upper Fraser	SEL::Anderson/Seton-Early Summer timing
		SEL::Bowron-Early Summer timing
		SEL::Chilko-Early Summer timing
		SEL::Francois-First Run-Early Summer timing
		SEL::Francois-Second Run-Early Summer timing
		SEL::Indian/Kruger-Early Summer timing
		SEL::Nadina/Francois-Early Summer timing
SEL::Taseko-Early Summer timing		
6	Early Summer - Lower Fraser	SEL::Chilliwack-Early Summer timing
		SEL::Nahatlatch-Early Summer timing
		SEL::Pitt-Early Summer timing
7	Summer - Chilko	SEL::Chilko-Summer timing
8	Summer - Late Stuart	SEL::Takla/Trembleur/Stuart-Summer timing
9	Summer - Nechako	SEL::Francois/Fraser-Summer timing
10	Summer - Quesnel	SEL::Quesnel-Summer timing
94	(new) Summer - Harrison	SER::Harrison River
95	(new) Summer - Raft	SEL::Kamloops-Early Summer timing
11	Fall - Cultus	SEL::Cultus-Late timing
12	Fall - Portage	SEL::Seton-Late timing
13	Fall - South Thompson	SEL::Shuswap Complex-Late timing
14	Fall - Birkenhead	SEL::Lillooet/Harrison-Late timing
15	Fall - Lower Fraser	SEL::Harrison-downstream migrating-Late timing
		SEL::Harrison-upstream migrating-Late timing
16	Somass	SEL::Great Central
		SEL::Sproat
17	Henderson	SEL::Henderson
18	WCVI - Other	SEL::Alice
		SEL::Canoe Creek
		SEL::Cecilia
		SEL::Cheewat
		SEL::Clayoquot
		SEL::Deserted
		SEL::Fairy
		SEL::Hesquiat
		SEL::Hobiton
		SEL::Jansen
		SEL::Kanim
		SEL::Kennedy
		SEL::Maggie
SEL::Megin		

No.	Outlook Unit Name	Conservation Unit
		SEL::Muchalat SEL::Muriel SEL::Nitinat SEL::O'Connell SEL::Owossitsa SEL::Park River SEL::Power SEL::William/Brink
19	Areas 11 to 13	SEL::Fulmore SEL::Heydon SEL::Ida/Bonanza SEL::Kakweiken SEL::Loose SEL::Mackenzie SEL::Nahwitti SEL::Nimpkish SEL::Pack SEL::Phillips SEL::Quatse SEL::Schoen SEL::Shushartie SEL::Tzoonie SEL::Vernon SEL::Village Bay SEL::Woss
20	Sakinaw	SEL::Sakinaw
21	Areas 7 to 10	SEL::Long SEL::Owikeno SEL::Owikeno-Late timing SEL::South Atnarko Lakes SEL::Wannock[Owikeno]
22	Coastal Areas 3 to 6	SEL::Backland SEL::Banks SEL::Bloomfield SEL::Bolton Creek SEL::Bonilla SEL::Borrowman Creek SEL::Busey Creek SEL::Canoona SEL::Cartwright Creek SEL::Chic Chic SEL::Curtis Inlet SEL::Dallain Creek SEL::Deer SEL::Devon SEL::Dome SEL::Douglas Creek SEL::Elizabeth SEL::Elsie/Hoy SEL::End Hill Creek SEL::Evelyn SEL::Evinrude Inlet

No.	Outlook Unit Name	Conservation Unit
		SEL::Fannie Cove
		SEL::Freeda/Brodie
		SEL::Hartley Bay
		SEL::Hevenor Inlet
		SEL::Higgins Lagoon
		SEL::Kadjusdis River
		SEL::Kainet Creek
		SEL::Kdelmashan Creek
		SEL::Keecha
		SEL::Kent Inlet Lagoon Creek
		SEL::Kenzuwash Creeks
		SEL::Keswar Creek
		SEL::Kildidt Creek
		SEL::Kildidt Lagoon Creek
		SEL::Kimsquit
		SEL::Kisameet
		SEL::Kitkiata
		SEL::Kitlope
		SEL::Koeye
		SEL::Kooryet
		SEL::Kunsoot River
		SEL::Kwakwa Creek
		SEL::Lewis Creek
		SEL::Limestone Creek
		SEL::Lowe/Simpson/Weare
		SEL::Mary Cove Creek
		SEL::Mcdonald Creek
		SEL::Mcloughlin
		SEL::Mikado
		SEL::Monckton Inlet Creek
		SEL::Namu
		SEL::Pine River
		SEL::Port John
		SEL::Powles Creek
		SEL::Price Creek
		SEL::Prudhomme
		SEL::Roderick
		SEL::Ryan Creek
		SEL::Salter
		SEL::Scouler/Kilpatrick
		SEL::Shawatlan
		SEL::Sheneeza Inlet
		SEL::Ship Point Creek
		SEL::Sockeye Creek
		SEL::Spencer Creek
		SEL::Stannard Creek
		SEL::Talamoosa Creek
		SEL::Tankeeah River
		SEL::Treneman Creek
		SEL::Tsimtack Lakes
		SEL::Tuno Creek East
		SEL::Tuno Creek West

No.	Outlook Unit Name	Conservation Unit
		SEL::Tuwartz
		SEL::Tyler Creek
		SEL::Wale Creek
		SEL::Watt Bay
		SEL::West Creek
		SEL::Whalen
		SEL::Yaaklele Lagoon
		SEL::Yeo
23	Babine Lake - Enhanced	SEL::Babine
24	Skeena - Wild	SEL::Alastair
		SEL::Aldrich
		SEL::Asitika
		SEL::Atna
		SEL::Azuklotz
		SEL::Bear
		SEL::Clements
		SEL::Damshilgwit
		SEL::Dennis
		SEL::Ecstall/Lower
		SEL::Footsore/Hodder
		SEL::Johanson
		SEL::Johnston
		SEL::Kitsumkalum
		SEL::Kitwancool
		SEL::Kluatantan
		SEL::Kluayaz
		SEL::Lakelse
		SEL::Maxan
		SEL::Mcdonell
		SEL::Morice
		SEL::Motase
		SEL::Nilkitkwa
		SEL::Sicintine
		SEL::Slangeesh
		SEL::Spawning
		SEL::Split Mountain/Leverson
		SEL::Stephens
		SEL::Sustut
		SEL::Swan
		SEL::Tahlo/Morrison
25	Nass	SEL::Bowser
		SEL::Bulkley
		SEL::Damdochax/Wiminasik
		SEL::Fred Wright
		SEL::Kwinageese
		SEL::Meziadin
		SEL::Oweegee
26	Haida Gwaii	SEL::Ain/Skundale/Ian
		SEL::Awun
		SEL::Fairfax
		SEL::Jalun
		SEL::Marian/Eden

No.	Outlook Unit Name	Conservation Unit
		SEL::Marie
		SEL::Mathers
		SEL::Mercer
		SEL::Skidegate
		SEL::Yakoun
27	Alsek	SEL::Blanchard
		SEL::Klukshu
		SEL::Neskatahin
28	Stikine - Wild	SEL::Christina
		SEL::Chutine
		SEL::Tahltan
29	Taku - Wild	SEL::King Salmon
		SEL::Kuthai
		SEL::Little Trapper
		SEL::Tatsamenie
Chinook		
96	Fraser River Spring Run 42	CK::South Thompson-Bessette Creek
		CK::Lower Thompson-spring timing-age 1.2
97	Fraser River Spring Run 52	CK::Lower Fraser River-spring timing
		CK::Lower Fraser River-Upper Pitt
		CK::Fraser Canyon-Nahatlatch
		CK::Middle Fraser River-spring timing
		CK::Upper Fraser River-spring timing
		CK::North Thompson-spring timing-age 1.3
98	Fraser River Summer Run 52	CK::Lower Fraser River-summer timing
		CK::Middle Fraser River-Portage
		CK::Middle Fraser River-summer timing
		CK::South Thompson-summer timing-age 1.3
		CK::North Thompson-summer timing-age 1.3
99	Fraser River Summer Run 41	CK::Maria Slough
		CK::South Thompson-summer timing-age 0.3
		CK::Shuswap River-summer timing-age 0.3
		CK::Upper Adams River_su_1.x
100	Fraser River Fall Run 41	CK::Lower Fraser River-fall timing (white)
		(P)Hatchery Exclusion-Lower Fraser River
39	WCVI - Hatchery	includes production from major hatchery facilities at Conuma, Stamp, and Nitinat rivers
40	WCVI - Wild	CK::Nootka and Kyuquot
		CK::Northwest Vancouver Island
		CK::Southwest Vancouver Island
41	Johnstone Strait Area (including mainland inlets)	CK::Homathko
		CK::Klinaklini
		CK::Northeast Vancouver Island
		CK::South Coast-southern fjords
42	Georgia Strait Fall (wild and small hatchery operations)	CK::Boundary Bay
		CK::East Vancouver Island-Cowichan and Koksilah
		CK::East Vancouver Island-Goldstream
		CK::East Vancouver Island-Nanaimo and Chemainus-fall timing
		CK::South Coast-Georgia Strait
43	Georgia Strait Fall (large hatchery operations)	CK::East Vancouver Island-Qualicum and Puntledge-fall timing

No.	Outlook Unit Name	Conservation Unit
44	Georgia Strait Spring and Summer	CK::Vancouver Island-Georgia Strait_su_0.3
		CK::East Vancouver Island-Nanaimo-spring timing
45	Areas 7 and 8	CK::Bella Coola-Bentinck
		CK::Dean River
46	Areas 9 and 10	CK::Docee
		CK::Rivers Inlet
		CK::Wannock
47	Coastal Areas 3 to 6	CK::North and Central Coast-early timing
		CK::North and Central Coast-late timing
		CK::Portland Sound-Observatory Inlet-Lower Nass
		CK::Skeena Estuary
48	Nass	CK::Upper Nass
49	Haida Gwaii	CK::Haida Gwaii-East
		CK::Haida Gwaii-North
50	Skeena	CK::Ecstall
		CK::Kalum-early timing
		CK::Kalum-late timing
		CK::Lakelse
		CK::Lower Skeena
		CK::Middle Skeena-large lakes
		CK::Middle Skeena-mainstem tributaries
		CK::Sicintine
		CK::Upper Bulkley River
		CK::Upper Skeena
		CK::Zymoetz
51	Alsek	CK::Alsek
52	Stikine	CK::Stikine-early timing
		CK::Stikine-late timing
53	Taku	CK::Taku-early timing
		CK::Taku-late timing
		CK::Taku-mid timing
54	Yukon	CK::Big Salmon
		CK::Middle Yukon River and tributaries
		CK::Nordenskiold
		CK::Northern Yukon River and tributaries
		CK::Old Crow
		CK::Pelly
		CK::Porcupine
		CK::Salmon Fork
		CK::Stewart
		CK::Upper Yukon River
		CK::White and tributaries
CK::Yukon River-Teslin headwaters		
Coho		
55	Mid and Upper - Fraser	CO::Fraser Canyon
		CO::Middle Fraser
56	Thompson	CO::Lower Thompson
		CO::North Thompson
		CO::South Thompson
57	Lower Fraser	CO::Lillooet
		CO::Lower Fraser-A

No.	Outlook Unit Name	Conservation Unit
		CO::Lower Fraser-B
58	WCVI	CO::Clayoquot
		CO::Juan de Fuca-Pachena
		CO::West Vancouver Island
59	Area 12	CO::Homathko-Klinaklini Rivers
		CO::Nahwitti Lowland
60	Area 13 - North	CO::East Vancouver Island-Johnstone Strait-Southern Fjords
		CO::Southern Coastal Streams-Queen Charlotte Strait-Johnstone Strait-Southern Fjords
61	Georgia Strait	CO::Boundary Bay
		CO::East Vancouver Island-Georgia Strait
		CO::Georgia Strait Mainland
		CO::Howe Sound-Burrard Inlet
62	Areas 7 to 10	CO::Bella Coola-Dean Rivers
		CO::Rivers Inlet
		CO::Smith Inlet
63	Areas 5 and 6	CO::Brim-Wahoo
		CO::Douglas Channel-Kitimat Arm
		CO::Hecate Strait Mainland
		CO::Mussel-Kynoch
		CO::Northern Coastal Streams
64	Area 3	CO::Lower Nass
		CO::Portland Sound-Observatory Inlet-Portland Canal
		CO::Skeena Estuary
		CO::Upper Nass
65	Haida Gwaii - East (Area 2 East)	CO::Haida Gwaii-East
66	Haida Gwaii - North (Area 1)	CO::Haida Gwaii-Graham Island Lowlands
67	Haida Gwaii - West (Area 2 West)	CO::Haida Gwaii-West
68	Skeena	CO::Lower Skeena
		CO::Middle Skeena
69	Skeena - High Interior	CO::Upper Skeena
70	Alsek	CO::Alsek River
71	Stikine	CO::Lower Stikine
72	Taku	CO::Taku-early timing
		CO::Taku-late timing
		CO::Taku-mid timing
73	Yukon	CO::Porcupine
Pink (pink CU types: PKO = odd year, PKE = even year)		
74	Fraser - Odd only	PKO::Fraser River
75	Squamish - Odd only	PKO::East Howe Sound-Burrard Inlet
76	WCVI - Odd & Even	PKE::Northwest Vancouver Island
		PKE::West Vancouver Island
		PKO::West Vancouver Island
77	Areas 11 to 13 - Odd & Even	PKE::Southern Fjords
		PKO::Nahwitti
		PKO::Southern Fjords
		PKO::East Vancouver Island-Johnstone Strait
78	Georgia Strait - West - Odd & Even	not yet defined; includes some seapen releases

No.	Outlook Unit Name	Conservation Unit
79	Georgia Strait - East - Odd & Even	PKE::Georgia Strait
		PKO::Georgia Strait
80	Areas 7 to 10 - Odd & Even	PKE::Hecate Lowlands
		PKE::Hecate Strait-Fjords
		PKO::Hecate Strait-Fjords
		PKO::Hecate Strait-Lowlands
		PKO::Homathko-Klinaklini-Smith-Rivers-Bella Coola-Dean
81	North Coast Areas 3 to 6 - Odd & Even	PKE::Hecate Lowlands
		PKE::Hecate Strait-Fjords
		PKE::Middle-Upper Skeena
		PKE::Nass-Skeena Estuary
		PKE::Upper Nass
		PKO::Hecate Strait-Fjords
		PKO::Hecate Strait-Lowlands
		PKO::Lower Skeena
		PKO::Middle and Upper Skeena
		PKO::Nass-Portland-Observatory
		PKO::Nass-Skeena Estuary
		PKO::Upper Nass
		82
PKE::North Haida Gwaii		
PKE::West Haida Gwaii		
PKO::East Haida Gwaii		
PKO::North Haida Gwaii		
PKO::West Haida Gwaii		
Chum		
83	Fraser River	CM::Fraser Canyon
		CM::Lower Fraser
84	WCVI	CM::Northwest Vancouver Island
		CM::Southwest Vancouver Island
85	Johnstone Strait Area and Mainland Inlets (Areas 11 to 13)	CM::Bute Inlet
		CM::Loughborough
		CM::Northeast Vancouver Island
		CM::Southern Coastal Streams
		CM::Upper Knight
86	Georgia Strait	CM::Georgia Strait
		CM::Howe Sound-Burrard Inlet
87	Coastal Areas 5 & 6	CM::Douglas-Gardner
		CM::Hecate Lowlands
		CM::Mussel-Kynoch
88	Haida Gwaii	CM::East HG
		CM::North Haida Gwaii
		CM::North Haida Gwaii-Stanley Creek
		CM::Skidegate
		CM::West Haida Gwaii
89	Skeena - Nass	CM::Lower Nass
		CM::Lower Skeena
		CM::Middle Skeena
90	Areas 7 to 10	CM::Bella Coola River-Late
		CM::Bella Coola-Dean Rivers

No.	Outlook Unit Name	Conservation Unit
		CM::Rivers Inlet
		CM::Smith Inlet
		CM::Spiller-Fitz Hugh-Burke
		CM::Wannock
91	Yukon (mainstem)	CM::Donjek-Kluane
		CM::Middle Yukon River
		CM::North Yukon River
		CM::Old Crow
		CM::Stewart
		CM::Teslin
		CM::White River
92	Yukon (Porcupine)	CM::Porcupine River
93	Taku	CM::Taku

Appendix 2. Expansion of acronyms used in this document.

Acronym	Expanded Form
A/G	Amber / Green (WSP Status classification)
CK	Chinook salmon
CM	Chum salmon
CO	Coho salmon
CSAS	Canadian Science Advisory Secretariat
CU	Conservation Unit
DD	Data Deficient (WSP Status classification)
EFS	Effective Female Spawners
ENSO	El Niño – Southern Oscillation
GST	Georgia Strait
IMEG	Interim Management Escapement Goal
MEF	Mid-Eye to Fork (length measurement)
MSY	Maximum Sustainable Yield
NA	Not Applicable
ND	No Data (i.e. data deficient)
NWVI	Northwest Vancouver Island
OU	Outlook Unit
PKE	Pink salmon – Even year (Conservation Unit type)
PKO	Pink salmon – Odd year (Conservation Unit type)
PST	Pacific Salmon Treaty
R/A	Red / Amber (WSP Status classification)
SEL	Sockeye salmon – Lake (Conservation Unit type)
SER	Sockeye salmon – River (Conservation Unit type)
SWVI	Southwest Vancouver Island
TTC	Trans-boundary Technical Committee
US	The United States of America
WCVI	West Coast Vancouver Island

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