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PACIFIC SALMON OUTLOOK
PACIFIC REGION
2018

Canada

PRELIMINARY 2018 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 Plans (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. In some cases, multiple categories are reported to reflect variation in status among component populations within the Outlook Unit, or to capture the degree of uncertainty in the assessment. 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. Stock-specific fishing plans described in the annual Salmon Integrated Fisheries Management Plans (IFMP).

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 rated as Outlook Categories 1 and 2 may limit fishing opportunities for Outlook Units at higher Outlook Categories. Where possible, the comments associated with each Outlook Unit identify such potential constraints. For Outlook Units where a range of Outlook Categories is provided, fisheries may be shaped in response to that variation.

This preliminary version of the 2018 outlook should be regarded as an early scan of salmon production, and is subject to change as more information becomes available. However, individual outlooks may be updated periodically as statistical forecasts and assessments are completed and reviewed.

Summary of Pacific Salmon Outlook Units for 2018

A total of **91** Outlook Units were considered and outlooks categorized for **81**. Eight (**8**) units were data deficient (ND), and two (**2**) Pink units were not applicable given their off-cycle year (NA). Twenty-six (**26**) Outlook Units are expected to be at or above target abundance (categories 3, 3/4, 4), while **31** are expected to be of some conservation concern (categories 1, 1/2, 2). The remaining **24** Outlook Units have mixed outlook levels (categories 1/3, 1/4, 2/3, 2/4). Overall, the outlook for 2018 has declined marginally relative to the previous outlook (2017 for most species but 2016 for Pink). Ten (**10**) Outlook Units <u>improved</u> in category (**Sockeye**: Fraser Early Summer - North Thompson, South Thompson, Lower Fraser, Fraser Summer – Quesnel, Fall – South Thompson, as well as Somass and Haida Gwaii; **Chinook**: Johnstone Strait (incl Mainland Inlets), Georgia Strait – Fall; **Chum**: Yukon). Seventeen (**17**) units <u>declined</u> in category (**Sockeye**: Fraser Fall – Lower Fraser; Areas7-10, Babine Lake – Enhanced, Skeena – Wild, Nass; **Chinook**: Nass, Skeena, Alsek; **Coho**: Mid and Upper Fraser, Thompson, Area 3, Haida Gwaii – Area 2 East; **Pink**: Georgia Strait – East, Areas 7 - 10, North Coast Areas 3-6, Haida Gwaii; **Chum**: Coastal Areas 5&6). Note that, although Fraser Summer – Harrison appears to have declined, it is only because a component CU (Widgeon Creek) was placed in the wrong OU in previous assessments. The individual status categories for the component populations have remain unchanged from the previous assessment.

Returns of most Pacific salmon stocks have been increasingly variable due to a combination of factors such as: numbers of parental spawners and changing freshwater and marine environments impacting subsequent production from these spawners at each life history stage. The 2018 outlook for salmon returns shows this variation but also suggests a period of continued reduced productivity. In 2018, returns of some salmon stocks may continue to be influenced by exposure to extremely warm water temperatures in the central NE Pacific ocean (the “warm blob”) in 2014-2015 and subsequent El Niño conditions that lasted through the first half of 2016. These conditions are often linked to resulting changes in the marine food web including zooplankton composition, density, and distribution. For Pacific salmon, the full implications of these conditions remain uncertain; in the past however, these conditions have been associated with reduced survival and/or growth for salmon. These conditions could also affect returning adults in 2018 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. Readers are encouraged to refer to the latest fishery notices for the most up-to-date information in-season information on fishery opportunities.

Sockeye

- Nass River: Average to below average returns with opportunities for directed harvest expected.
- Skeena River: The 2018 return is expected to be poor based on poor contributions of age-5 Sockeye from the lowest return on record in 2013; weak returns of age-4 Sockeye from the 2014 brood year; and only modest age-3 jack returns in 2017 from the 2015 brood year. Return rates have become more uncertain in recent years, with greater variability among the Skeena stock components and brood year survival rates. Projected returns are expected to limit harvest opportunities.
- Central Coast: Below average returns are expected in Areas 7 and 8. Areas 9 and 10 have shown some rebuilding trend over the past decade; however, returns in Area 9 are not expected to reach levels that would allow harvest opportunity.
- Fraser River: Despite a strong brood year in 2014, below average returns are expected for many Fraser Sockeye populations due to a sustained period of low recruitment and an observed trend of decreasing fecundity that is suspected to be contributing to reduced productivity. Late run South Thompson (Shuswap) Sockeye populations are expected to comprise the majority of the total Fraser Sockeye returns in 2018. Below average returns are expected for Early Stuart Sockeye and very poor returns for Cultus Sockeye. Harvest opportunities are determined based on in-season assessments.
- Somass River: After abundant returns of 2015 and 2016, 2017 returns of Somass Sockeye return were below average. In 2018, Somass Sockeye are expected to return near or slightly below the long term average. Opportunities for directed harvest may be possible.
- Okanagan River: Returns in 2018 are expected to be positively influenced by large returns in 2014 and high smolt outmigration in 2016 but tempered by a continued expectation of low marine survival rates. Opportunities for directed harvest may be possible.
- Quantitative forecasts will be provided in early 2018 for most Sockeye Salmon populations. Fishing opportunities for Sockeye are determined based on in-season assessments of actual Sockeye returns, expected in March.

Chinook

- Returns are expected to vary considerably across areas due to on-going fluctuations in freshwater and marine survival rates and variable parental spawner abundance.
- Northern BC: Below average returns are expected in the Skeena and Nass rivers after record low returns in 2017. Low returns expected in most of the other systems, although average returns are expected in the Bella Coola area.
- Southern BC: Many populations are stocks of concern or are expected to return at low levels due to combinations of low spawner abundance, persistently low survival rates and other factors contributing to declining productivity. For Fraser stocks, these circumstances affect all seasonal runs. Expect continued discussion of fishery restrictions to limit exploitation rates. WCVI wild populations remain a stock of concern while Chinook populations returning to the east side of Vancouver Island (e.g. Strait of Georgia – Fall) have been rebuilding.
- Yukon Chinook: Returns to Canada are expected to remain below the long-term average; fisheries opportunities are uncertain.

Coho

- Survival rates of Coho remain variable and are still below historic highs in most areas, particularly Southern BC.
- Northern BC: Coho Salmon populations generally continue to exhibit higher productivity and returns than southern populations, especially earlier summer Coho in some of the larger river systems. Fall coastal Coho Salmon returns continue to be variable across the north. Overall, returns

are uncertain and will depend on marine survival rates of juveniles that went to sea in 2017. 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.

Pink

- Northern BC: Poor returns are expected for Pink Salmon in Areas 1 and 2 based on weak brood year escapement and declining trends over the past 3 cycles. There is potential for good returns of some stocks in Areas 3 to 6 based on brood year escapements. Poor returns are expected in Area 7 and average returns in Area 8. It appears the even-year run of the Bella Coola/Atnarko stock has recovered from impacts of the 2010 flood event. Opportunities for directed harvest are expected in areas with average or better-than-average returns.
- Southern BC: There are minimal returns of Pink Salmon to the Fraser River in even years. Local Pink abundances in other areas of Georgia Strait may provide opportunities for harvest.

Chum

- Chum forecasts are highly uncertain.
- Northern BC: Haida Gwaii Chum stocks have been consistent over the past decade with poor productivity and returns in Area 2E and moderate productivity in Area 2W; escapements have been estimated at management targets. Improved escapements were observed for Chum stocks in the Skeena River and Nass River in 2016 relative to recent years, followed by poor returns in 2017 following from very poor brood year escapements. Wild brood year escapements for Central Coast stocks are 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 Chum (mainstem): An above-average run is expected in 2018.

Outlook Unit Sockeye	2018 Outlook Category	Comments
Sockeye		
1. Okanagan-Osoyoos	2	The 2014 brood year escapement of 83,446 (peak live plus dead terminal count) was more than double the current Canadian domestic target for this CU. Returns of Okanagan sockeye adults to the Columbia and Okanagan rivers in 2018 will be derived from smolt cohorts that migrated seaward in spring 2015 (returning as 5-year-olds), 2016 (returning as 4-year-olds) and 2017 (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 Niña) or warm ocean (El Niño) events, respectively. Marine survival of two of three sea entry years noted above were influenced by warm ocean conditions at sea entry due to the development of a very strong El Niño event in 2015-2016 and, as anticipated returns of 4-year olds in 2017 indicate, the smolt cohort that migrated seaward in 2015 experienced well below average survival. Examination of an association between historic smolt-to-adult return (SAR) variations and NOAA Fisheries "stop-light" indicators suggests that both the 2015 and 2016 sea-entry smolts are likely to have experienced survival rates below 2% by comparison with an all-year average of approximately 6%. Applying a 1.5 % SAR to smolt cohorts for the 2015 and 2016 sea-entry years yields an estimate of around 105,000 adults contributing to the 2017-2019 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 2018 of 89,000 age-4 and age-5 Okanagan wild-origin fish. Production of hatchery-origin fish from Skaha Lake may increase these returns by at most 10% for a total return of 98,000 adult sockeye of Okanagan origin in 2018. *(2017 Outlook Category was 2)*
Fraser Sockeye	**Overview**	The dominant age-of-maturity for most Fraser Sockeye stocks is four years, so Sockeye returning in 2018 as four year olds originate from the 2014 brood year. Five year olds returning in 2018 originate from the 2013 brood year. A few stocks returning in 2018 had above average brood year escapements for five year olds, therefore, for these stocks, five year olds would be expected to contribute more to total returns compared to average. However, most stocks returning in 2017 exhibited poor four year old survival, which would reduce the expected contribution of five year olds in the 2018 forecast. Fraser Sockeye returns exhibited below average survival for most stocks in 2017. 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 2018. 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 2018 could be affected.
2. Early Stuart (CU: Takla-Trembleur-Early Stuart)	1	Below average returns are expected in 2018 relative to the cycle average of 132,000 (1954-2014). The 2014 brood year escapement for Early Stuart (23,300 effective female spawners: EFS) was similar to the cycle average (18,700 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 2018 returns. The 2013 brood year escapement for Early Stuart (39,700 effective female spawners: EFS) was well below the 2013 cycle average (104,600 EFS). This CU is in the Red WSP status zone. *(2017 Outlook Category was 1)*

Outlook Unit Sockeye	2018 Outlook Category	Comments
3. Early Summer – North Thompson (CU: North Barriere-ES)	3	**Upper Barriere River** (previously identified as Fennell Creek): Average returns are expected in 2018 relative to the cycle average of 20,000 (1974-2014). The 2014 brood year escapement for North Barriere (6,800 EFS) was above the cycle average (3,700 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 2018 returns. The 2013 brood year escapement for North Barriere (2,000 EFS) was similar to the cycle average (1,900 EFS). This CU is in the Amber WSP status zone. (*2017 Outlook Category was 2)*
4. Early Summer South Thompson (CU: Shuswap-ES)	3	**Scotch (combined with Seymour for Shuswap-ES CU):** Average returns are expected in 2018 relative to the cycle average of 351,700 (1982-2014). The 2014 brood year escapement for Scotch (68,800 EFS) was similar to the cycle average (62,000 EFS). 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 2018 returns. The 2013 brood year escapement (11,000 EFS) was above the cycle average (3,800 EFS). **Seymour (combined with Scotch for Shuswap-ES CU):** Average returns are expected in 2018 relative to cycle average of 354,000 (1954-2014). The 2014 brood year escapement for Seymour (including McNomee) (57,400 EFS) was similar to the cycle average (49,700 EFS). Given the age of maturity of Scotch is predominantly four year olds, five year olds are expected to contribute a small proportion to the 2018 returns. The 2013 brood year escapement (13,900 EFS) was well above the cycle average (3,800 EFS). This combined stock group is the Shuswap-ES CU, which is in the Green WSP status zone. *(2017 Outlook Category was 2)*

Outlook Unit Sockeye	2018 Outlook Category	Comments
5. Early Summer – Mid & Upper Fraser (CUs: Anderson-Seton-ES; Nadina-Francois-ES (new mixed); Bowron-ES; Taseko-ES)	3/3/1/1 (Note: two of the four CUs are in the Red WSP status zone)	**Gates (Anderson-Seton-ES):** Above average returns are expected in 2018 relative to the cycle average of 22,000 (1974-2014). The 2014 brood year escapement for Gates (8,500 EFS) was the largest observed on the cycle and more than three times the cycle average (2,200 EFS). Given the age of maturity of Gates is predominantly four year olds, five year olds are expected to contribute a small proportion to the 2018 returns. The 2013 escapement (23,100 EFS) was the largest observed on the cycle and almost three times the cycle average (8,500 EFS). This CU is in the Amber/Green WSP status zone. The individual 2018 Outlook Category is 3. (*2017 Outlook Category was 3)* **Nadina (Nadina-Francois-ES):** Above average returns are expected in 2018 relative to the cycle average of 36,000 (1978-2014). The 2014 brood year escapement for Nadina (30,700 EFS) was the largest observed on the cycle and more than 5 times the cycle average (5,600 EFS). Given the age of maturity of Nadina is predominantly four year olds, five year olds are expected to contribute little to the 2018 returns. The 2013 brood year escapement for Nadina (7,100 EFS) was similar to the cycle average (8,300 EFS)**.** This CU is in the Amber/Green WSP status zone. The individual 2018 Outlook Category is 3. (*2017 Outlook Category was 3)* **Bowron (Bowron-ES):** Average returns are expected in 2018 relative to the cycle average of 25,000 (1954-2014). The 2014 brood year escapement for Bowron (6,300 EFS) was almost double the cycle average (3,300 EFS). Given the age of maturity of Bowron is predominantly four year olds, five year olds are expected to contribute little to the 2018 returns. The 2013 brood year escapement for Bowron (1,900 EFS) was below the cycle average (2,800 EFS). This CU is in the Red WSP status zone. The individual 2018 Outlook Category is 1. (*2017 Outlook Category was 1)* **Taseko (Taseko-ES):** Return data are not available for this CU; only escapements can be compared to the time series average. The brood year escapement index for Taseko was small (60 EFS) and one tenth of the cycle average of 520 EFS (1994-2014); 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. (*2017 Outlook Category was 1)*

Outlook Unit Sockeye	2018 Outlook Category	Comments
6. Early Summer – Lower Fraser (CU: Pitt-ES; Chilliwack-ES; Nahatlach-ES)	3/2/2	**Pitt (Pitt-ES):** Average returns are expected in 2018 relative to the average across cycles of 71,000 (1953-2014). Pitt has a higher proportion of five year old recruits relative to four year old recruits. The 2013 brood year escapement (five year old returns) for Pitt (30,200 EFS) was double the average across cycles (15,000 EFS); however given the poorer survival of four years olds from this brood (2013) in 2017 it may reduce five year old returns in 2018. The 2014 brood year escapement (four year old returns) for Pitt (14,400 EFS) was similar to the average across cycles (15,000 EFS). This CU is in the Green WSP status zone. The individual 2018 Outlook Category is 3. (*2017 Outlook Category was 3)* **Chilliwack Lake/Dolly Varden Creek (Chilliwack-ES):** Return data are not available for this CU; only escapements can be compared to the time series average**.** The brood year escapement in 2014 (1,700 EFS) was similar to the recent cycle average (1,500 EFS) from 2002-2014 when both sites (river and lake) were assessed. The 2013 brood year escapement (5,400 EFS) was similar to the cycle average (5,800 EFS). This CU is in the Amber/Green WSP status zone. The individual 2018 Outlook Category is 2. (*2017 Outlook Category was 2)* **Nahatlatch Lake/River (Nahatlach-ES):** Return data are not available for this CU; only escapements can be compared to the time series average. The 2014 brood year escapement (2,100 EFS) was similar to the cycle average from 1982 to 2014 (2,900 EFS). The 2013 brood year escapement was small (800 EFS) and below the cycle average from 1977 to 2013 (1,500 EFS). This CU is in the Amber WSP status zone. The individual 2018 Outlook Category is 2. *(2017 Outlook Category was 1)*
7. Summer – Chilko (CUs: Chilko-S; Chilko-ES)	4	Above average returns are expected in 2018 relative to the cycle average of 1.6 million (1954-2014). Escapement in the 2014 brood year (666,000 EFS) was more than double the cycle average (253,000 EFS) for Chilko (Chilko-S/Chilko-ES). Chilko freshwater survival was average in the 2018 brood year; however smolt abundance in 2016 was well above average due to the large spawner abundance in 2014. Five year olds are expected to contribute a small proportion to the 2018 return. The 2013 brood year escapement (624,500 EFS) was four times the cycle average (154,000 EFS). This CU is in the Green WSP status zone. *(2017 Outlook Category was 4)*
8. Summer – Late Stuart (CUs: Takla-Trembleur-Stuart-S)	2	Average returns are expected in 2018 relative to the cycle average of 227,000 (1954-2014). The 2014 brood year escapement for Late Stuart (Takla-Trembleur-Stuart-S) (27,900 EFS) was similar to the cycle average (23,600 EFS). Given the age of maturity of Late Stuart is predominantly four year olds, five year olds are expected to contribute a small proportion to the 2018 returns. The 2013 brood year escapement for Late Stuart (71,000 EFS) was well below the cycle average (218,000 EFS). This CU is in the Red/Amber WSP status zone. *(2017 Outlook Category was 2)*
9. Summer – Nechako (CU: Francois-Fraser-S)	4	Average returns are expected in 2018 relative to the cycle average of 606,000 (1954-2014). The 2014 brood year escapement for Nechako (Francois-Fraser-S) (240,400 EFS) was the largest on record and more than three times the cycle average (76,100 EFS). Given the age of maturity of Nechako is predominantly four year olds, five year olds are expected to contribute little to the 2018 returns. The 2013 brood year escapement for Stellako (54,100 EFS) was above the cycle average (30,500 EFS). This CU is in the Amber/Green WSP status zone. *(2017 Outlook Category was 4)*

Outlook Unit Sockeye	2018 Outlook Category	Comments
10. Summer – Quesnel (CU: Quesnel-S)	3	Average returns are expected in 2018 relative to the cycle average of 1.1 million (1954-2014). The 2014 brood year escapement for Quesnel (Quesnel-S), (431,000 EFS) was well above the cycle average (190,600 EFS). Given the age of maturity of Quesnel is predominantly four year olds, five year olds are expected to contribute little to the 2018 returns. Further, the 2013 brood year escapement for Quesnel (93,700 EFS) was well below the cycle average (458,800 EFS). This CU is in the Red/Amber WSP status zone. *(2017 Outlook Category was 2)*
94. Summer-Harrison (CU: Harrison-River Type; Widgeon-River Type)	1/4	**Harrison River:** Average returns are expected in 2018 relative to the average across cycles of 110,300 (1954-2015). 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 the 2014 escapement (238,400 EFS) (age-4 recruits in 2018) and 2015 escapement (58,300 EFS) (age-3 recruits in 2018) at Harrison were higher than the long-term average for this stock (29,900 EFS). This CU is in the Green WSP status zone. *(2017 Outlook Category was 4)* **Widgeon Creek:** CU return data are not available; instead, escapements are compared to time series averages. The 2014 brood year escapement (150 EFS) was below average across cycles from 1950 to 2013 (300 EFS). This CU is in the Red WSP status zone. *(2017 Outlook Category was 1)*
95. Summer-Raft (CU: Kamloops-ES)	3	**Raft River**: Above average returns are expected in 2018 relative to the cycle average of 24,000 (1954-2014). The 2014 brood year escapement for Raft (Kamloops-ES) (9,500 EFS) was the largest observed on the cycle and almost three times the cycle average (3,300 EFS). Five year olds are expected to contribute a higher proportion than average to this stock's return in 2018; however given the poorer survival of four year olds from this brood (2013) in 2017 it may further reduce five year old returns in 2018. The 2013 brood year escapement for Raft (9,000 EFS) was more than double the cycle average (4,400 EFS). **North Thompson River**: The North Thompson River mainstem and its tributaries do not have return data; only escapements can be compared to the time series average. The 2014 brood year escapements for North Thompson River (12,000 EFS) and its tributaries (800 EFS) were both above the time series averages of 2,500 EFS and 300 EFS, respectively (1960-2014). Five year olds are expected to contribute a higher proportion than average to this stock's return in 2018; however given the poorer survival of four year olds from this brood (2013) in 2017 it may further reduce five year old returns in 2018. The 2013 brood year escapement for North Thompson (8,500 EFS) and its tributaries (1,400 EFS) were also well above the times series averages. This CU is in the Amber WSP status zone. *(2017 Outlook Category was 3)*
11. Fall – Cultus (CU: Cultus-L)	1	Very low returns are expected in 2018 relative to the cycle average of 35,000 (1954-2014). Juvenile production of 51,000 smolts (60% hatchery marked) fell well below both the long-term (1954-2014) and recent (1990-2014) cycle averages of 827,000 and 211,000 smolts, respectively. Given the age of maturity of Cultus is predominantly four year olds, five year olds are expected to contribute little to the 2018 returns. This CU is in the Red WSP status zone. *(2017 Outlook Category was 1)*

Outlook Unit Sockeye	2018 Outlook Category	Comments
12. Fall – Portage (CU: Seton-L)	1	Average returns are expected in 2018 relative to the cycle average of 77,000 (1958-2014). The 2014 brood year escapement for Portage (12,300 EFS) was above the cycle average (8,600 EFS). Given the age of maturity of Portage is predominantly four year olds, five year olds are expected to contribute little to the 2018 returns. The 2013 brood year escapement for Portage (4,200 EFS) was similar to cycle average (2,900 EFS). This CU is in the Red WSP status zone. *(2017 Outlook Category was 1)*
13. Fall – South Thompson (CU: Shuswap-L)	4	Average returns are expected in 2018 relative to the cycle average of 7.8 million (1954-2014). The 2014 brood year escapement for the South Thompson (1.1 million EFS) was similar to the cycle average (1.2 million). Given the age of maturity of the South Thompson is predominantly four year olds, five year olds are expected to contribute little to the 2018 returns. The 2013 brood year escapement for the South Thompson (87,900 EFS) was almost ten times larger than the cycle average (8,800). This CU is in the Amber/Green WSP status zone. *(2017 Outlook Category was 3)*
14. Fall – Birkenhead (CU: Lillooet-Harrison-L)	3	Below average returns are expected in 2018 relative to the cycle average of 463,000 (1954-2014). The 2014 brood year escapement for Birkenhead (19,600 EFS) was below the cycle average (66,500 EFS). In contrast, the 2013 brood year escapement (46,800 EFS) was above the cycle average (29,500). Five year olds are expected to contribute a higher proportion than average to this stock's return in 2018; however given the poorer survival of four year olds from this brood (2013) in 2017 it may further reduce five year old returns in 2018. This CU is in the Amber WSP status zone. *(2017 Outlook Category was 3)*
15. Fall – Lower Fraser CUs: Harrison (U/S)-L; Harrison (D/S)-L)	1/3	**Weaver:** Below average returns are expected in 2018 relative to the cycle average of 499,000 (1970-2014). The 2014 brood year escapement for Weaver (10,400 EFS) was one-third of the cycle average for this stock (30,500 EFS); however, early freshwater survival (1,700 fry/EFS) was average (1,600 fry/EFS). Five year olds are expected to contribute a higher proportion than average to this stock's return in 2018; however given the poorer survival of four year olds from this brood (2013) in 2017 it may further reduce five year old returns in 2018. The 2013 brood year escapement for Weaver (15,500 EFS) was similar to cycle average (20,400 EFS). This CU is in the Red WSP status zone. Individual 2018 Outlook Category is 1. *(2017 Outlook Category was 2)* **Miscellaneous Harrison Lake rearing stocks:** The miscellaneous Harrison Lake stocks do not have return data; only escapements can be compared to the time series average. The 2014 brood year escapement (3,600 EFS) was below the recent cycle average of 9,400 EFS (2002-2014). Five year olds are expected to contribute a higher proportion than average to this stock's return in 2018; however given the poorer survival of four year olds from this brood (2013) in 2017 it may further reduce five year old returns in 2018. The 2013 brood year escapement (5,200 EFS) was similar to the recent cycle average of 4,300 EFS (2005-2013). This CU is in the Amber/Green WSP status zone. The individual 2018 Outlook Category is 3. *(No Outlook Category assigned in 2017).*
16. Somass	2/3	The 2017 return was below average. The 2018 forecast for Somass Sockeye is for increased returns near or slightly below the long term average. Sockeye produced from brood years 2013 to 2015 will return in 2018. *(2017 Outlook Category was 2)*

Outlook Unit Sockeye	2018 Outlook Category	Comments
17. Henderson	2	Data are limited for Henderson Sockeye, so no quantitative forecasts are produced. A categorical management forecast is produced based on spawner and sometimes smolt abundance for the contributing brood years and trends in marine survival rate. Based on these limited data, the management forecast for Henderson Sockeye is in the "very low" zone, corresponding to an expected return of less than 15,000 adult fish. *(2017 Outlook Category was 2*)
18. WCVI - Other	2	Assessment data are not available to forecast others systems. However, WCVI populations tend to co-vary. Therefore, expectations are for low to average returns, similar to the outlook for Somass and Henderson. *(2017 Outlook Category was 2*)
19. Areas 11 to 13	2/3	Preliminary Sockeye returns in 2017 to the Nimpkish River (Area 12) were substantially below the 2013 brood year as well as both the 4- and 12-year averages. Assessment of Quaste escapement data associated with the Quatse River (Area 12) escapement data has not yet been completed, but indications are for below average return abundance. Preliminary Sockeye returns in Area 13, specifically the Phillips River, were average in 2017. No systems are assessed in Area 11. The only indication of marine survival comes from decreased returns of local Pink and Coho salmon in 2017 (same 2016 outmigration year as 2018 Sockeye). Consequently, the above average brood in 2014 and potential for continued reduced marine survival conditions result in an outlook that is low to near target. *(2017 Outlook Category was 2/3)*
20. Sakinaw	1	Twelve adult Sockeye returned to Sakinaw Lake in 2017 from 17,097 smolts enumerated in 2015. The resulting marine survival for the 2015 ocean entry year was 0.06% for hatchery origin and 0.32% for wild origin smolts indicating a continuation of declining trend. The 2017 return included 10 returns from captive brood from either Rosewall or Ouillette hatcheries, and 2 natural origin Sockeye. The expectation for 2018 is for a small improvement to 220 adults based on 78,878 smolts observed in 2016 and average marine survival (0.3% - 0.6%). As few as 50 adults are expected if marine survival for the 2016 ocean entry group remains the same as 2015. *(2017 Outlook Category was 1)*
21. Areas 7 to 10	1/1/2/3	Below average returns are expected in Areas 7 and 8. Area 8 Sockeye returns are expected to be poor based on low brood year escapements and continuing poor return rates. Average returns are expected in Areas 9 and 10. Areas 9 and 10 have shown some rebuilding trends over the past decade, however returns in Area 9 are not expected to reach levels that would allow harvest opportunities and Area 10 has only periodically reached levels that allow harvest opportunities. Returns are expected to limit harvest opportunities in Area 9, harvest opportunities in Area 10 are dependent on marine survival. For 2018, the Outlook Category for Areas 7 and 8 is 1, for Area 9 is 2 and for Area 10 is 3. *(2017 Outlook Category was 1/4)*
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. *(2017 Outlook Category was 2/4)*
23. Babine Lake - Enhanced	2	Poor abundance forecast in 2018 for age-5 Sockeye based on poor 2017 age-4 returns. Low age-4 returns expected in 2018 based on only modest age-3 returns in 2017. Expecting a low return in 2018. *(2017 Outlook Category was 4)*

Outlook Unit Sockeye	2018 Outlook Category	Comments
24. Skeena - Wild	1/2	Return rates for Skeena -Wild more variable than Babine Lake - Enhanced, but generally poor abundance forecast in 2018 for age-5 Sockeye based on poor 2017 age-4 returns. Low age-4 returns expected in 2018 based on only modest age-3 returns in 2017. Expecting a low return in 2018. Return rates have become more uncertain in recent years, with greater variability among the Skeena stock components. *(2017 Outlook Category was 1/4)*
25. Nass	2/3	Average to below average returns are expected. Kwinageese returns in 2017 were much improved. *(2017 Outlook Category was 3/4)*
26. Haida Gwaii	3	Average returns are expected for 2018. Escapements over the past decade have generally been stable and at management targets. Status is uncertain for some systems. *(2017 Outlook Category was 2/4)*
27. Alsek	3	Based on brood year escapements below and above the MSY target range and stock-recruitment relations from historical records, an average run is expected. *2018 Outlook Category is 3. (2017 Outlook Category was 3)*
28. Stikine - Wild	4	Based on a combination of primary brood year smolt counts and sibling-based predictions, an above-average run is anticipated for 2018 and well above escapement goals. *2018 Outlook Category is 4. (2017 Outlook Category was 4)*
29. Taku - Wild	4	The 2017 run was average. Based on a stock-recruitment forecast, the 2018 run is expected to be near the 10 year average of 176,000 and well over the escapement point-goal of 75,000. *(2017 Outlook Category was 4) 2018 Outlook Category is 4*
Chinook		
96. Fraser River Spring Run 4_2	1	Despite higher parental escapements in 2014, expectations for 2018 are for continued very depressed abundance due to ongoing unfavorable marine survival conditions and low productivity (which is exacerbated by a decline in spawner fecundity in recent years). Escapements in 2017 again declined compared to the parent brood escapements in 2013, and were below Sgen for Spius, Coldwater and Nicola, despite hatchery supplementation. *(2017 Outlook Category was 1)*
97. Fraser River Spring Run 5_2	1	Expectations are for continued overall very low abundance related to depressed parental escapements and continuing unfavorable marine survival conditions and low productivity. On average, escapements attained only 60% of the parental escapement level. Several rivers escaped well under 100 fish and less than 10 were observed in two systems. *(2017 Outlook Category was 1)*
98. Fraser River Summer Run 5_2	1	Expectations are for continued overall very low abundance related to low parental escapements and low productivity. Escapements in 2016 were the lowest since 1979 and escapements in 2017 declined compared to the parental escapements in 2012. *(2017 Outlook Category was 1)*
99. Fraser River Summer Run 4_1	2	Instability in smolt-to-adult survival rates and productivity combined with variable escapements temper the outlook for this aggregate. If marine survival conditions improve, abundance in 2018 may return to more average levels. Escapements in 2017 were below parental levels in 2013 for most populations, and the aggregate escapement appears to be 50-60% of the parental escapement. Note that fecundity has been declining for this group and is about 20% below the average of about a decade ago. *(2017 Outlook Category was 2)*

Outlook Unit Chinook	2018 Outlook Category	Comments
100. Fraser River Fall Run 4_1	2	Escapement estimates are not yet available for the Harrison (natural) and Chilliwack (hatchery) rivers and the forecasts for 2018 will be available in late winter. Current marine conditions and stock productivity appear unfavorable, and parental escapement in 2014 at Harrison was below the lower bound of the escapement goal (75,100). Field reports indicate low escapement and few jacks this year. Chilliwack hatchery production, marine survival, and recent fishery exploitation are expected to return sufficient abundance to achieve hatchery production objectives. *(2017 Outlook Category was 2)*
39. WCVI - Hatchery	3	Overall returns in 2018 will likely be similar to levels observed in 2017. Observed returns of earlier age classes and ocean indicators of marine survival suggest that the survival rate for the 2013 brood year was below average, while 2014 and 2015 brood years appear to be average. Therefore, an average return of the 4-year old age class is expected. *(2017 Outlook Category was 3)*
40. WCVI-Wild	1	Some modest increases in the escapement of wild populations have been observed over the last 3 years and this improvement is expected to be maintained in 2018. However, spawner levels in the SWVI CU remain below biological benchmarks with fewer than 100 spawners observed in several rivers in recent years. Therefore, wild WCVI Chinook remains a stock of concern. *(2017 Outlook Category was 1)*
41. Johnstone Strait Area (including mainland inlets)	2 Wild 3/4 Hatchery	Escapement monitoring on the Campbell/Quinsam system is ongoing. Preliminary information suggests improved returns for this hatchery indicator relative to the 10-year and historic averages and the estimated 7,500 that returned in 2016. Early results show returns to the Phillips River are stronger than expected and well above its historic average. Wild populations in this area are poorly monitored. Outlook for wild stocks is consistent with past years, at low level (category 2); however hatchery stocks are likely near to above target (category 3/4). (*2017 Outlook Category was 2/3)*
42. Georgia Strait Fall (wild and small hatchery operations)	2/3	An increasing trend in Chinook returns to the Cowichan River continued in 2017 where, for the second year in a row, adult returns exceeded the 6,500 goal. High jack returns in 2017 suggest potential improvement in 2018 age 3 returns. It is too early to know the age composition from 2017 and , as a result, the age 4 return abundance in 2018. The 2018 outlook is for above average returns but this may be upgraded to abundant if age composition suggests a healthy component of age 4 returns in 2018. Of note is the large component of wild fish in this population, estimated at 90% for all age classes in 2017. A similar rebuilding trend has not been observed in the Nanaimo River where counts remain low and stable (<5,000). 2018 escapement is expected to remain low and stable. Significant variation between rivers can be expected due to variable freshwater and ocean conditions. *(2017 Outlook Category was 2/3)*
43. Georgia Strait Fall (large hatchery operations)	3	Returns to the Puntledge River have shown a modest increase over the last three years with nearly 10,000 fish in 2017. A similar increase has been observed at the Big Qualicum River with a return of 9,800 observed in 2017 (58% above the 4-year average). Stable production levels and improved survivals for several hatchery indicators suggest above average returns are likely for 2018. *(2017 Outlook Category was 2)*

Outlook Unit Chinook	2018 Outlook Category	Comments
44. Georgia Strait Spring and Summer	2	A spot swim of key holding areas for Nanaimo River spring Chinook did not reveal any fish in 2017. A survey of summer Chinook holding areas produced a count of 252 fish on August 1, 2017. Puntledge summer Chinook came in above the 4-year average at just over 1,000 fish. Rebuilding efforts for these populations are continuing. The summer run in Cowichan River was monitored with a DIDSON again in 2017 and preliminary results indicate the presence of approximately 100 adults. At these levels, rebuilding will take several generations even with improved survival. *(2017 Outlook Category was 2)*
45. Areas 7 and 8	3/4	2018 Bella Coola returns are expected to be average based above average 2016 and below average 2017 returns. Other assessments are of poor quality. *(2017 Outlook Category was 3/4)*
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 stocks are expected to be below average based on recent trends; however, assessments are of poor quality. 2018 Outlook Category 2 (Chuckwalla/Kilbella) and 4 (Wannock). *(2017 Outlook Category was 2/4)*
47. Coastal Areas 3 to 6	2/3	These stocks are generally depressed and this pattern is expected to continue or worsen given generally low productivity among stocks in the north-west. Assessments are of poor quality. *(2017 Outlook Category was 2/3)*
48. Nass	2/3	2018 return is highly uncertain after record low escapements in 2017 and generally low productivity among stream-type stocks in the north-west. *(2017 Outlook Category was 3/4)*
49. Haida Gwaii	ND	No recent assessments of Yakoun Chinook. *(2017 Outlook Category was ND)*
50. Skeena	2/3	Below average returns are expected for both summer and spring timed Skeena Chinook. The 2018 return is highly uncertain after record low escapements in 2017 and generally low productivity among stream type stocks in the north-west. Declining trends in smaller Skeena CU's were evident after 2016. 2018 Outlook category 2 or 3. *(2017 Outlook Category was 2/4)*
51. Alsek	2	Based on brood year escapements below and within the MSY target range and a well below forecast return in 2017, a below average run is expected. 2018 Outlook Category is 2. *(2017 Outlook Category was 2/3)*
52. Stikine	2	The Transboundary Technical Committee uses a sibling-based forecast model to generate a forecast estimate with a factor applied to account for recent forecast error. 2017 returns were well below forecast. 2018 is expected to be below the 10-year average of 24,900 and below the escapement goal range of 14,000 – 28,000. The anticipated run size does not provide for directed fisheries. 2018 Outlook Category is 2. *(2017 Outlook Category was 2)*
53. Taku	2	The Transboundary Technical Committee uses a sibling based forecast model to generate a forecast estimate with a factor applied to account for recent forecast errors. 2017 returns were well below forecast, and 2018 is expected to be well below the 10-year average of 26,900 and well below the escapement goal range of 19,000-36,000. The anticipated run size does not provide for directed fisheries. 2018 Outlook Category is 2. *(2017 Outlook Category was 2)*

Outlook Unit Chinook	2018 Outlook Category	Comments
54. Yukon	2	The Canadian-origin return of Yukon River Chinook salmon in 2018 is anticipated to be below the long-term average of approximately 80,000 fish. The current spawning escapement goal endorsed by the U.S./Canada Yukon River Panel is 42,500-55,000 Chinook salmon and has been met only 40% of the time over the last decade. Five and 6 year-old fish dominate returns. Production resulting from an average spawning escapement in 2012 (32,700 spawners, 51% female) is anticipated to lead to a below normal return of 6 year olds, while poor escapement in 2013 (28,700, 42% female) is also 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 over 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 2018. (*2017 Outlook Category was 2)*
Coho		
55. Mid and Upper Fraser	1	Ongoing poor marine conditions continue to hamper rebuilding. Escapement programs for 2017 are just underway, and it is too early to predict return abundance. *(2017 Outlook Category was 2)*
56. Thompson	1	Ongoing poor marine conditions continue to hamper rebuilding. Escapement programs for 2017 are just underway, and it is too early to predict return abundance. *(2017 Outlook Category was 2)*
57. Lower Fraser	1	Ongoing poor marine conditions continue to hamper rebuilding. Escapement programs for 2017 will start in mid-December. *(2017 Outlook Category was 1)*
58. WCVI	2/3	Information to forecast Coho returns is limited. Therefore, there is considerable uncertainty in this assessment. For 2018, most of the return will originate from the 2015 brood year that went to sea in 2017. For most WCVI areas, Coho spawning populations have been relatively stable. *(2017 Outlook Category was 2/3)*
59. Area 12	2/3	Returns in 2017 appear varied throughout the area and many programs are still ongoing. Based on the preliminary poor returns to the Keogh River indicator in Area 12, marine conditions were poor for the 2016 outmigration. The formal forecast for Coho has not yet been finalized but will likely be similar to the recent 3-year average. Smolt production in 2017 was above average for Keogh River (82,000). If marine conditions continue to be poor, this higher than average smolt production may help buffer any possible reduced survival for returns in 2018. *(2017 Outlook Category was 2/3)*
60. Area 13 - North	2/3	Most Coho monitoring programs are still ongoing in Area 13. Hatchery indicators for this outlook unit are Quinsam and Big Qualicum. Preliminary 2017 returns are tracking below average for both rivers. The wild indicator is Black Creek (included in the Georgia Strait OU). At present, expectations for 2018 are similar to 2017 and will be updated once the formal forecasts are completed in March. *(2017 Outlook Category was 2/3)*

Outlook Unit Coho	2018 Outlook Category	Comments
61. Georgia Strait	2	Hatchery indicators for this outlook unit are Quinsam and Big Qualicum, where 2017 returns are tracking below average. The wild indicator is Black Creek. In 2016, 25,000 Coho smolts were produced out of Black Creek, which is well below average, leading to a below average return of 400 so far in 2017. Smolt production in 2017 was 34,000. Preliminary observations from Black Creek have shown a very strong jack return (greater than 4,000 fish). Higher than normal jack returns have also been noted in other systems in Upper Georgia Strait, although there is no apparent correlation between jack returns and adult returns. As a result, at present the outlook for 2018 is similar to 2017 and will be updated once formal forecasts in March are complete. *(2017 Outlook Category was 2)*
62. Areas 7 to 10	ND	Coho populations generally continue to exhibit higher productivity and returns than southern populations, especially earlier 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 ocean survival rates. Opportunities for incidental harvest expected. Coho returns in Areas 7 to 10 are uncertain and depend on ocean survival rates. *(2017 Outlook Category was ND)*
63. Areas 5 and 6	ND	Returns are uncertain and depend on the survivals of the juveniles that went to sea in 2017. No assessment in 2017. *(2017 Outlook Category was ND)*
64. Area 3	3/4	Good returns seen in 2017. Average to above average returns are expected in 2018, but depend on the survivals of the juveniles that went to sea in 2017. *(2017 Outlook Category was 4)*
65. Haida Gwaii -E (Area 2 East)	3/4	Limited assessments since 2002. Returns to enumeration sites such as Tlell and Deena have been generally good over the past decade, with weaker than average escapement at Tlell and average at Deena. *(2017 Outlook Category was 4)*
66. Haida Gwaii -N (Area 1)	ND	No recent assessments. *(2017 Outlook Category was ND)*
67. Haida Gwaii -W (Area 2 West)	ND	No recent assessments. *(2017 Outlook Category was ND)*
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. *(2017 Outlook Category was 4)*
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. *(2017 Outlook Category was 4)*
70. Alsek	3	Only a partial weir count is carried out. Brood year counts were below average. *(2017 Outlook Category was 3)*
71. Stikine	ND	Reliable brood year escapement data are limited and ancillary observations are sometimes contradictory. *(2017 Outlook Category was ND)*
72. Taku	3	Based on preliminary smolt abundance in 2017 combined with recent smolt-to-adult survival rates, an average run is expected for 2018. *(2017 Outlook Category was 3)*
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; however, no assessment programs are currently undertaken in Canada and the current stock status is unknown. *(2017 Outlook Category was ND*)

Outlook Unit Pink	2018 Outlook Category	Comments
Pink		
74. Fraser - Odd only(CU: Fraser River)	NA	Relative to the odd numbered years, insignificant abundance of Pink Salmon return to the Fraser River in even numbered years; therefore, no quantitative assessment information is available. *(2016 Outlook Category was ND.)*
75. Squamish - Odd only (CUs: East Howe Sound-Burrard Inlet; and, Georgia Strait)	NA	Relative to the odd numbered years, insignificant abundance of Pink salmon return to the Squamish River in even numbered years; no quantitative assessment information is available. *(2016 Outlook Category was ND.)*
76. WCVI - Odd & Even	ND	No quantitative assessment information is available. (*2016 Outlook Category was ND; 2017 Outlook Category was ND*)
77. Areas 11 to 13 - Odd & Even	2/3	Since 2015, there has been only limited assessment of Pink Salmon in Areas 12 and 13 and no assessment in Area 11. Odd Year: In 2017, preliminary returns to the main indicators in Area 12-13 fell below their parental brood returns of 2015 and 3 generational averages. Even Year: Returns in 2016 also showed a significant decline in abundance, following an improving trend over the previous 3 even return years. Based on recent returns from recent years, the outlook for 2018 is for below to near target returns. Historically, Pink returns to this area have been highly variable and expectations continue to be highly uncertain. *(2016 Outlook Category was 2/3; 2017 Outlook Category was 2/3)*
78. Georgia Strait - West - Odd & Even	2	These are primarily odd year dominant stocks. Preliminary information suggests returns in 2017 were much lower than brood returns in 2015. Assuming similar poor marine survival, the outlook for 2018 is for returns below target. Due to the high variability of Pink Salmon, these expectations are highly uncertain. *(2016 Outlook Category was 2; 2017 Outlook Category was 2/3)*
79. Georgia Strait - East - Odd & Even	2	These are primarily odd year dominant stocks. Assessment information on Pink Salmon in this area is limited. Preliminary information suggests returns in 2017 were much lower than brood returns in 2015. Assuming continuation of poor marine survival, results for 2018 returns are expected to be below target. Due to the high variability of Pink Salmon, these expectations are highly uncertain. *(2016 Outlook Category was 2/3; 2017 Outlook Category was 2/3)*
80. Areas 7 to 10 - Odd & Even	2/3	Poor returns are expected in Area 7 and average returns in Area 8. It appears the even-year Bella Coola/Atnarko stock has recovered from impact of the 2010 flood. Odd year returns are expected to be above average if marine survival is good. *(2016 Outlook Category was 3/4; 2017 Outlook Category was 1/4)*
81. North Coast Areas 3 to 6 - Odd & Even	2/3	Returns are expected to be mostly low to average, based on brood year escapements. Opportunities for directed harvest are expected. *(2016 Outlook Category was 4; 2017 Outlook Category was 4)*

Outlook Unit Pink	2018 Outlook Category	Comments
82. Haida Gwaii - Even	2	Area 1 – Low returns expected based on poor brood year returns and declining trend over last 3 cycles. Area 2W – Very low returns expected based on exceptionally poor brood year escapements with many streams not having any spawning adults observed. Area 2E – Low returns expected based on poor brood year returns and declining trend over last 3 cycles. (2016 Outlook Category was 3/4; 2017 Outlook Category was NA)
Chum		
83. Fraser River (CUs: Fraser Canyon and Lower Fraser)	4	Fraser River Chum salmon escapement has averaged 1.3 million spawners since 2011, achieving the annual escapement goal of 800,000 spawners in each year. Returns in 2018 will primarily originate from the 2014 brood escapement (1.2 million spawners). The warm Pacific Ocean "Blob" persisted through the spring of 2015, when fry from the 2014 escapement entered the marine environment; the impact of these environmental conditions on Fraser Chum productivity and returns in 2018 is unknown. Escapement assessments in 2017 are currently underway; an estimate of the 2017 spawning escapement will be available by April 2018. The October 23, 2017 in-season estimate of the Fraser Chum terminal return was approximately 1.3 million fish with a 79% probability that the run will exceed the spawning escapement goal. *(2017 Outlook Category was 4)*
84. WCVI	2/3	Returns of WCVI Chum in 2018 will likely be similar to levels observed in 2017. Observed returns of earlier age 3 Chum in 2017 plus Coho returns from the same ocean entry year suggest the marine survival rate for the 2013 and 2014 brood years are low and will likely limit both the age 4 and age 5 contributions to the 2018 return. In WCVI areas other than Nitinat, Chum populations have been relatively depressed in recent years. *(2017 Outlook Category was 2/3)*
85. Johnstone Strait Area and Mainland Inlets (Areas 11 to 13)	3	Johnstone Strait: Returns in 2017 are still being assessed; however, abundance appears to be below average in most systems surveyed. A weak 4 year old age class was evident this year coming from the average 2013 brood year and 2014 ocean entry year. This coincides with poor survivals encountered by local Pink and Coho Salmon stocks from the same ocean entry year and is a decline from the 2013 ocean entry which resulted in large Chum returns. Mainland Inlets: Below average parental brood abundances in 2014 and observations of poor survival for Coho and Pink from the 2015 ocean entry year will likely mean below average return of age 4 Chum in 2018. Similarly, below average brood abundance in 2015 and observations of poor marine survival from ocean entry in 2016 means below average age 3 return is likely in 2018. The resulting outlook for 2018 is Chum returns below average to near target. Expect variability in Chum returns. Summer run Chum Salmon stocks in 2017 appear to have done well relative to recent years but remained below average throughout the area. This will likely continue through 2018. *(2017 Outlook Category was 3)*

Outlook Unit Chum	2018 Outlook Category	Comments
86. Georgia Strait	3	Programs assessing Chum in this area are currently ongoing. Preliminary escapement enumeration data for 2017 indicate lower abundances and below target escapements for systems in mid to northern Georgia Strait. Returns in Nanaimo and Cowichan were well above target. There was significant variation in return strength. For 2018, returns are expected to improve for some stocks in the southern part of Georgia Strait, such as Cowichan, but decrease for others, such as Jervis Inlet stocks. Mid-Island stocks and Nanaimo River are expected to decrease based on below average brood year escapement in 2014. *(2017 Outlook Category was 3)*
87. Coastal Areas 5 & 6	1/3	For 2018, returns will be based on modest 2013 brood year escapements. Poor Chum returns have been observed in recent years but were improved in 2016. Returns of enhanced Kitimat Chum stocks are uncertain, depending on ocean survivals. *(2017 Outlook Category was 1/4)*
88. Haida Gwaii	2/4	Haida Gwaii Chum stocks have been consistent over the past decade with poor productivity and returns in Area 2E and moderate productivity in Area 2W. Chum returns to Tasu Sound have generally had good productivity with returns achieving management targets in most years over the past decade. Terminal fishing opportunities in Tasu Sound dependent on good marine survival. *(2017 Outlook Category was 2/4)*
89. Skeena-Nass	1/2	Ongoing poor returns expected from very poor brood year escapements, although 2016 escapements were improved relative to recent years, 2017 escapements were reduced. *(2017 Outlook Category was 1/2)*
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. *(2017 Outlook Category was 3/4)*
91. Yukon (mainstem)	4	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 70,000-104,000 Chum Salmon and the goal has consistently been met since the early 2000s. Escapements in 2013 and 2014, the principal brood years (5 and 4 year-olds) for the 2018 run, were well above the minimum goal. An above-average run is expected in 2018. *(2017 Outlook Category was 3)*
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 22,0000-49,000 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 2013 and 2014, the principal brood years (5 and 4 year-olds) contributing to the 2017 run, were weak at 25,376 and 7,304, respectively. While returns in 2017 were promising, there is likely to be a precautionary approach taken in 2018, given the poor performance of this stock in recent years. Fishing opportunities could be restricted. *(2017 Outlook Category was 2)*
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. *(2017 Outlook Category was 2)*

Appendix 1. Outlook Units and associated Conservation Units.

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	**Summer – Harrison (new)**	SER::Harrison River
		SER::Widgeon Creek
95	**Summer – Raft (new)**	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
		SEL::Muchalat

No.	Outlook Unit Name	Conservation Unit
		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
		SEL::Fannie Cove

No.	Outlook Unit Name	Conservation Unit
		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::Scoular/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
		SEL::Tuwartz

No.	Outlook Unit Name	Conservation Unit
		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::Slamgeesh
		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
		SEL::Marie

No.	Outlook Unit Name	Conservation Unit
		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 4_2	CK::South Thompson-Bessette Creek
		CK::Lower Thompson-spring timing-age 1.2
97	Fraser River Spring Run 5_2	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 5_2	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 4_1	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 4_1	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

No.	Outlook Unit Name	Conservation Unit
		CO::Lower Fraser-A
		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

No.	Outlook Unit Name	Conservation Unit
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	Haida Gwaii – Odd & Even	PKE::East Haida Gwaii
		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
		CM::Old Crow
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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