



Fisheries and Oceans  
Canada

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Canada

**PACIFIC SALMON OUTLOOK  
PACIFIC REGION  
2019**

Canada 

## 2019 SALMON OUTLOOK

Since 2002, Pacific Region (BC and Yukon) Stock Assessment staff has provided a categorical outlook for the upcoming 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 Outlook Units. 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 updates and are announced through the [DFO Fishery Notice system](#) or other official communications from DFO.

For each Outlook Unit, an Outlook category is provided on a scale of 1 to 4 (Table 1). The category assessment results from the interpretation of current 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 for Conservation Units of Pacific salmon.

Assigned Outlook categories will influence fisheries expectations in areas 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.

Table 1. Description of the criteria used to define Outlook Categories and associated general fisheries expectations.

<b>Outlook Category</b>	<b>Category Definition</b>	<b>Criteria</b>	<b>General Fisheries Expectations<sup>1</sup></b>
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.

Outlook Category	Category Definition	Criteria	General Fisheries Expectations <sup>1</sup>
ND	No Data	Insufficient data to determine outlook category.	

<sup>1</sup> “General Fisheries Expectations” provides a generalized description of the potential fisheries consequences of each outlook category. Stock-specific fishing plans will be described in the annual Salmon Integrated Fisheries Management Plans (IFMP) due to be published prior to July 2019.

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 are provided, fisheries may be shaped in response to this range.

**This preliminary version of the 2019 outlook should be regarded as an early scan of salmon production, and is subject to change as more information becomes available. In addition, individual outlooks may be superseded with formal statistical forecasts and assessments, as they are completed and reviewed.**

## Summary of Pacific Salmon Outlook for 2019

A total of **91** Outlook Units (OUs) were considered with **82** OUs receiving an outlook category assignment. Eight (**8**) OUs were data deficient (ND), and one (**1**) Pink OU was not applicable given that 2019 is the off-cycle year for this group (NA). Sixteen (**16**) Outlook Units are expected to be at or above target abundance (categories 3, 3/4, 4), while **39** are expected to be of some conservation concern (categories 1, 1/2, 2). The remaining **27** Outlook Units have mixed outlook levels (categories 1/3, 1/4, 2/3, 2/4). Overall, the outlook for 2019 has declined relative to the previous outlook (2018 for most species but 2017 for Pink Salmon).

Five (**5**) Outlook Units improved in category (**Sockeye**: Somass, WCVI-Other, Skeena-Wild; **Chinook**: Alsek; **Coho**: WCVI).

Twenty-five (**25**) units declined in category (**Sockeye**: Early Summer - North Thompson, South Thompson, Mid and Upper Fraser, Summer - Late Stuart, Nechako, Quesnel, Harrison, Raft, Fall - South Thompson, Birkenhead, as well as Okanagan and Coastal Areas 3 to 6; **Coho**: Area 3, Haida Gwaii - East (Area 2 East), Skeena, Skeena – High Interior; **Pink**: Fraser, Georgia Strait – East, West, North Coast Areas 3 to 6; **Chum**: Fraser River, Johnstone Strait Area and Mainland Inlets, Coastal Areas 5 & 6, Areas 7 to 10, Yukon).

## Environmental Outlook

DFO’s State of the Salmon Program develops tools and processes to foster salmon-ecosystem integration. Through this integrative work, this Program tracks Pacific salmon and ecosystem trends. Annual State of the Salmon meetings that support integration of science across salmon-ecosystem experts are published as DFO Technical Reports on the [DFO Publications website](#).

Global temperatures have been steadily increasing over the last century<sup>1</sup>. Temperatures are expected to continue this warming trend, and in British Columbia are predicted to reach a median temperature increase of 2.5°C by 2080<sup>2</sup>. The Yukon has warmed twice as fast as southern latitudes in Canada in the past 50 years, and temperatures are projected to increase by a further 2.0°C in the

next 50 years<sup>3,4</sup>. Local air and water temperatures have been particularly warm in recent years<sup>1,2</sup>, which can have direct effects on Pacific salmon stocks and the habitats they use throughout their lives.

Most Pacific salmon returning to spawn in 2019 reared as juveniles in the Northeast Pacific Ocean between 2016 and 2019, depending on their life-history and age-at-maturity. The notable ‘warm blob’ heat wave in the Northeast Pacific Ocean was present from the latter half of 2013 to the fall of 2016<sup>5</sup> just prior to the ocean entry timing of most of these fish. Sea-surface-temperatures (SST) during this period were 3-5°C above seasonal averages, and extended down to depths of 100 m<sup>5</sup>. Concurrently, a strong El Niño event occurred in late 2015 to early 2016, further increasing temperatures to the hottest observed throughout the 137-year time-series.

The El Niño transitioned to cooler La Niña conditions by the end of 2016<sup>6</sup>. Although SSTs in the Northeast Pacific cooled in 2016, warm subsurface temperatures persisted at depths of 100-200 m until early 2018<sup>6,7</sup>. Any reprieve from these warm ocean temperatures was short lived, as warm temperature anomalies in Northeast Pacific and Bering Sea have again been observed, starting in the summer of 2018<sup>8</sup>. Therefore, Pacific salmon returning in 2019 would have spent most of their marine residence in warmer than average temperatures.

While physical oceanographic conditions of the Northeast Pacific reverted back to more typical observations in 2016, biological conditions continued to reflect a warmer ocean. Reduced stratification of the water column and increased upwelling of nutrients to surface water occurred in 2016. In 2017, winter mixing returned to 2011-2013 levels, suggesting that there was a normal nutrient supply in the NE Pacific<sup>6,7</sup>. Along the southwest coast of Canada in 2017, the timing and magnitude of the upwelling-favourable winds and currents would have supported average to below-average upwelling-based productivity<sup>9</sup>. In both 2016 and 2017, the zooplankton community continued to exhibit characteristics consistent with warmer ocean temperatures. Samples showed fewer lipid-rich subarctic and boreal copepods, and a greater abundance of lipid-poor southern copepods in 2016, with slight improvements in 2017<sup>10,11</sup>. The recent observations of warming ocean conditions in 2018 could reverse the improvements observed in 2017, again decreasing the proportion of lipid-rich northern copepods.

Most Pacific salmon returning to spawn in 2019 incubated as eggs, and depending on the life-history and age-at-maturity reared as juveniles in freshwater between 2014 and 2017. The Pacific Climate Impacts Consortium (PCIC) reported warmer than average air temperatures in British Columbia in recent years<sup>12</sup>, which coincided with the warm conditions observed in the Northeast Pacific Ocean<sup>5,8</sup>. Warm temperatures in rivers and lakes affected all life history stages of the 2019 Pacific salmon returns, through impacts to adults migrating upstream, egg incubation, juvenile rearing, and smolt downstream migration.

Warmer than average temperatures in freshwater pose particular challenges to adult salmon that migrate upstream during summer months in southern latitudes, when temperatures can exceed thermal tolerance levels for salmon. Temperatures above 18°C can result in decreased adult salmon swimming performance, and above 20°C can increase adult mortality, adult disease, egg viability, and legacy effects that have negative impacts on juvenile condition<sup>13,14,15,16,17</sup>. Summer river temperatures were particularly warm between 2014 and 2017, exceeding thermal optimal ranges for some salmon populations, such as adult Sockeye that migrate in the summer in the Fraser watershed<sup>12,13,14</sup>. Warmer temperatures also coincided with drought conditions and low

water levels in some Northern BC systems, influencing spawning habitat and fish distribution (C. Carr-Harris, DFO, pers. comm.).

Higher temperatures can influence timing of the hatching of eggs<sup>18</sup> and fry outmigration<sup>19</sup> and also fry swim performance<sup>15</sup>. On a positive note, warm temperatures can improve juvenile growth rates when prey are not limiting<sup>20,21</sup>, and also increase the length of the growing season in some areas<sup>22</sup>. Salmon population responses to changes in temperature are population specific and will vary by region (D.A. Patterson, DFO, pers. comm.).

Spring freshets in various BC rivers, and ice-off in higher latitude or altitude lakes occurred earlier than normal in recent years. Smolt outmigration was several weeks earlier than previously observed in areas that are monitored<sup>23</sup>. Temperature affects downstream survival of juvenile salmon by influencing both the optimal smoltification window<sup>24</sup> and swim performance<sup>20</sup>.

However, the overall influence on juvenile survival is less clear. Depending on the outmigration timing of juveniles, discharge conditions experienced by individual salmon populations will vary, and their responses to these conditions can also vary. For example, higher discharge decreases water clarity, which can decrease juvenile predation risk<sup>25,26</sup>; however, the resulting higher volume of suspended sediments also can have a direct negative effect on juvenile salmon causing mortality and reduced disease resistance<sup>27</sup>. For a number of BC Interior watersheds, the loss of forest canopy due to fires, pine beetle, and logging has compounded the intensity of spring runoff, which is anticipated to reduce salmon productivity in these freshwater systems (R.E. Bailey, DFO, pers. comm.).

Overall, environmental conditions have been warmer than average in the Northeast Pacific Ocean and in British Columbia and the Yukon affecting all life stages of Pacific salmon returning in 2019. Responses of individual salmon populations will vary spatially. However, salmon populations have experienced broadly similar conditions over the past few years, leading to the assumption that salmon responses and the resultant 2019 return abundances might resemble those observed in recent years. These recent observations have included below average survival for most Fraser Sockeye, Chinook, Chum, and Pink stocks, coast-wide declines and smaller body sizes and decreases in age-at-maturity for Chinook, and overall greater variability in salmon production.

A general summary of expected returns and potential fishery opportunities across species and major river systems are outlined below. This information is provided as a general indication of potential fishing opportunities for the coming year. Actual fishing opportunities for many populations are based on in-season information and assessments. Readers are encouraged to refer to the latest DFO Fishery Notices for the most up-to-date in-season information.

### **Sockeye**

- Nass River: Low returns are forecast for 2019 based on age-related returns in 2018.
- Skeena River: Low returns are forecast for 2019 based on age-related returns in 2018.
- Central Coast: Continued low productivity based on observed trends is expected for 2019.
- Fraser River: Low returns are forecast for 2019. Returns have fallen below the median forecast for most stocks since 2015.
- Somass River: Improved returns are forecast for 2019 based on improved marine conditions in 2017.
- Okanagan River: Continued low returns are forecast for 2019 due to marine survival concerns.

### **Chinook**

- Northern BC: Nass and Skeena escapements improved in 2018 after record lows in 2017.
- Southern BC: Continued very low returns expected to the Fraser River. Mixed returns elsewhere; most outlooks unchanged from 2018.
- Yukon Chinook: A below average return is expected. Fishing opportunities are determined based on in-season assessments.

### **Coho**

- Northern BC: Overall poor escapements in 2018 suggest lower productivity in 2019.
- Southern BC: Improved outlook for WCVI. Continued low returns expected for Interior and Lower Fraser River. Low to average returns expected to Georgia Strait.

### **Pink**

- Northern BC: Forecasted average returns for some areas suggest harvest opportunities.
- Southern BC: Below average returns expected to the Fraser River and Georgia Strait.

### **Chum**

- Northern BC: Overall returns for wild stocks are anticipated to be low; harvest opportunities are expected on enhanced stocks.
- Southern BC: Continued impacts of poor marine survival suggest returns will be below average to average for most stocks.
- Yukon Chum (mainstem): An above average return is expected. Fishing opportunities are determined based on in-season assessments.

Outlook Unit Sockeye	2019 Outlook Category	Comments
<b>Sockeye</b>		
1. Okanagan-Osoyoos	1/2	<p>The 2015 brood year escapement of 5,734 (peak live plus dead terminal count) achieved only 20 % of the current Canadian domestic target for this CU (29,365 as peak live plus dead in the terminal index area). Returns of Okanagan sockeye adults to the Columbia and Okanagan rivers in 2019 will be derived from smolt cohorts that migrated seaward in spring 2016 (returning as 5-year-olds), 2017 (returning as 4-year-olds) and 2018 (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 only sea entry year 2016 noted above was influenced by warm ocean conditions due to the development of a very strong El Niño event in 2015-2016. Further, examination of an association between historic smolt-to-adult return (SAR) variations and NOAA Fisheries “stop-light” indicators suggests that both the 2017 and 2018 sea-entry smolts are likely to have experienced an improvement in survival rates relative to the &lt;2% SAR applied to 2015 and 2016 sea entry year smolts. Applying a 3.6 % SAR to smolt cohorts for the 2017 and 2018 sea-entry years yields an estimate of around 69,000 adults contributing to the 2018-2021 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 2019 of 62,000 age-4 and age-5 Okanagan wild-origin fish. Production of hatchery-origin fish from Skaha Lake may increase these returns by 10-20 % for a total maximum return of 74,000 adult sockeye of Okanagan origin in 2019. (2018 Outlook Category was 2)</p>
<b>Fraser Sockeye</b>	<b>Overview</b>	<p>Quantitative forecasts for Fraser Sockeye stocks are produced annually. The 2019 forecasts will be presented to the Fraser River Panel at the Pacific Salmon Treaty meeting in February.</p> <p>Note that the dominant age-of-maturity for most Fraser Sockeye stocks is four years, so Sockeye returning in 2019 as four year olds originate from the 2015 brood year. Five year olds returning in 2019 originate from the 2014 brood year. There are a number of stocks returning in 2019 that have small brood year escapements for four year olds; therefore, for these stocks, five year olds would be expected to contribute more to total returns compared to average. Returns have fallen below the median forecast for most stocks since 2015.</p> <p>To generate outlooks specific to each Outlook Unit, the brood year escapement was compared to the abundance-based benchmarks calculated for the recent Wild Salmon Policy re-evaluation where available and the recent median escapement (or cycle line escapement for cyclic stocks). Where stock recruitment data exists for non-cyclic stocks, the lower abundance-based benchmark is calculated using the Ricker model and corresponds to <math>S_{GEN}</math>, while the upper abundance-based benchmark is 80% of <math>S_{MSY}</math>.</p>
2. Early Stuart  (CU: Takla-Trembleur-Early Stuart)	1	<ul style="list-style-type: none"> <li>• This CU’s status was determined to be RED in a recent WSP re-evaluation (Grant et al. 2017)</li> <li>• This CU was recommended for listing as endangered by COSEWIC</li> </ul> <p>Below average returns are expected for this CU. Brood Year effective female spawners (4,100) was significantly below the recent median escapement (32,800). (2018 Outlook Category was 1)</p>

Outlook Unit Sockeye	2019 Outlook Category	Comments
3. Early Summer – North Thompson  (CU: North Barriere-ES)	2	<ul style="list-style-type: none"> <li>This CU's status was determined to be AMBER in a recent WSP re-evaluation (Grant et al. 2017)</li> <li>This CU was recommended for listing as threatened by COSEWIC</li> </ul> Upper Barriere River (previously identified as Fennell Creek): Below average returns are expected for this CU. Brood Year effective female spawners (950) was above the WSP lower benchmark (640) but lower than the recent median escapement (2,300). (2018 Outlook Category was 3)
4. Early Summer South Thompson  (CU: Shuswap-ES)	2	<ul style="list-style-type: none"> <li>This CU's status was determined to be AMBER in a recent WSP re-evaluation (Grant et al. 2017)</li> <li>This CU was recommended for listing as not at risk by COSEWIC</li> </ul> Two main populations make up this Outlook Unit: <b>Scotch (combined with Seymour for Shuswap-ES CU):</b> Average for this cycle, but below all year average returns are expected for this CU. Brood Year effective female spawners (3,500) was lower than the recent median escapement (18,800) and lower than the cycle average (3,700). <b>Seymour (combined with Scotch for Shuswap-ES CU):</b> Average for this cycle, but below all year average returns are expected for this CU. Brood Year effective female spawners (4,000) was lower than the recent median escapement (15,800) but similar to the cycle average (3,700).(2018 Outlook Category was 3)
5. Early Summer – Mid & Upper Fraser  (CUs: Anderson-Seton-ES; Nadina-Francois-ES (new mixed); Bowron-ES; Taseko-ES)	2/2/1/1	<ul style="list-style-type: none"> <li>The Anderson-Seton CU's status was determined to be AMBER/GREEN in a recent WSP re-evaluation (Grant et al. 2017) and was recommended for listing as <i>Not at Risk</i> by COSEWIC.</li> <li>The Nadina-Francois CU's status was determined to be AMBER/GREEN in a recent WSP re-evaluation (Grant et al. 2017) and was recommended for listing as <i>Not at Risk</i> by COSEWIC.</li> <li>The Bowron CU's status was determined to be RED in a recent WSP re-evaluation (Grant et al. 2017) and was recommended for listing as <i>Endangered</i> by COSEWIC.</li> <li>The Taseko CU's status was determined to be RED in a recent WSP re-evaluation (Grant et al. 2017) and was recommended for listing as <i>Endangered</i> by COSEWIC.</li> </ul> Several populations make up this Outlook Unit: <b>Gates (Anderson-Seton-ES):</b> Average returns are expected for this CU. Brood year effective female spawners (9,600) were lower than the recent median escapement (15,100) but higher than the WSP lower benchmark (3,700). <b>CU Outlook 2.</b> (2018 Outlook Category was 3) <b>Nadina (Nadina-Francois-ES):</b> Below average returns are expected for this CU. Brood year effective female spawners (9,400) were lower than the recent median escapement (26,500) and lower than the WSP lower benchmark (21,700). <b>CU Outlook 2.</b> (2018 Outlook Category was 3) <b>Bowron (Bowron-ES):</b> Below average returns are expected for this CU. Brood Year effective female spawners (2,200) were lower than the recent median escapement (3,300) and lower than the WSP lower benchmark (5,200). <b>CU Outlook 1.</b> (2018 Outlook Category was 1) <b>Taseko (Taseko-ES):</b> Return data are not available for this CU. Based on escapement compared to the time series, below average returns are expected for this CU. Brood Year effective female spawners (1,400) were lower than the median escapement (2,000). <b>CU Outlook 1.</b> (2018 Outlook Category was 1)



Outlook Unit Sockeye	2019 Outlook Category	Comments
<p>6. Early Summer – Lower Fraser</p> <p>(CU: Pitt-ES; Chilliwack-ES; Nahatlach-ES)</p>	3/2/2	<ul style="list-style-type: none"> <li>• The Pitt CU status was determined to be GREEN in a recent WSP re-evaluation (Grant et al. 2017) and was recommended for listing as <i>Not at Risk</i> by COSEWIC.</li> <li>• The Chilliwack CU status was determined to be AMBER/GREEN in a recent WSP re-evaluation (Grant et al. 2017) and was recommended for listing as <i>Not at Risk</i> by COSEWIC.</li> <li>• The Nahatlatch CU status was determined to be AMBER in a recent WSP re-evaluation (Grant et al. 2017) and was recommended for listing as <i>Special Concern</i> by COSEWIC.</li> </ul> <p>Several populations make up this Outlook Unit:</p> <p><b>Pitt (Pitt-ES):</b> Average returns are expected for this CU. Brood year effective female spawners (18,400) were lower than the recent median escapement (47,500) but higher than the WSP lower benchmark (10,600). <b>CU Outlook 3.</b> (2018 Outlook Category was 3)</p> <p><b>Chilliwack Lake/Dolly Varden Creek (Chilliwack-ES):</b> Return data are not available for this CU. Representative escapement data series for this CU are only available since 2001. Based on escapement to this system compared to the time series, average returns are expected for this CU. Brood year effective female spawners (3,000) were lower than the median escapement (11,200). <b>CU Outlook 2.</b> (2018 Outlook Category was 2)</p> <p><b>Nahatlatch Lake/River (Nahatlach-ES):</b> Return data are not available for this CU. Based on escapement compared to the time series, below average returns are expected for this CU. Brood year effective female spawners (1,400) were lower than the median escapement (2000). <b>CU Outlook 2.</b> (2018 Outlook Category was 2)</p>
<p>7. Summer – Chilko</p> <p>(CUs: Chilko-S; Chilko-ES)</p>	4	<ul style="list-style-type: none"> <li>• This CU’s status was determined to be GREEN in a recent WSP re-evaluation (Grant et al. 2017) and was recommended for listing as <i>Not at Risk</i> by COSEWIC.</li> </ul> <p>Above average returns are expected for this Outlook Unit. Brood year effective female spawners (429,000) were above the WSP upper benchmark (353,900) though lower than the recent median escapement (837,000). The smolt outmigration from Chilko Lake associated with this year’s return (71 M) was higher than the long term average (21M). (2018 Outlook Category was 4)</p>
<p>8. Summer – Late Stuart</p> <p>(CUs: Takla-Trembleur-Stuart-S)</p>	1	<ul style="list-style-type: none"> <li>• This CU’s status was determined to be RED/AMBER in a recent WSP re-evaluation (Grant et al. 2017) and was recommended for listing as endangered by COSEWIC.</li> </ul> <p>Below average returns are expected for this CU. Brood year effective female spawners (4,400) was lower than the recent median escapement (52,500), lower than the cycle average (210,300). (2018 Outlook Category was 2)</p>
<p>9. Summer – Nechako</p> <p>(CU: Francois-Fraser-S)</p>	3	<ul style="list-style-type: none"> <li>• This CU’s status was determined to be AMBER/GREEN in a recent WSP re-evaluation (Grant et al. 2017) and was recommended for listing as <i>Special Concern</i> by COSEWIC.</li> </ul> <p>Average or better returns are expected for this CU. Brood year effective female spawners (47,600) were lower than the recent median escapement (95,950), but higher than the WSP lower benchmark (24,400). (2018 Outlook Category was 4)</p>

Outlook Unit Sockeye	2019 Outlook Category	Comments
10. Summer – Quesnel  (CU: Quesnel-S)	1	<ul style="list-style-type: none"> <li>This CU's status was determined to be RED/AMBER in a recent WSP re-evaluation (Grant et al. 2017) and was recommended for listing as <i>Endangered</i> by COSEWIC</li> </ul> <p>Below average returns are expected for this CU. Brood year effective female spawners (25,700) were lower than the cycle median escapement (436,650). However, a large escapement in 2014 (431,000) is expected to contribute a large number of 5 year olds to this return. (2018 Outlook Category was 3)</p>
94. Summer-Harrison  (CU: Harrison-River Type; Widgeon-River Type)	3/1	<ul style="list-style-type: none"> <li>The Harrison River Type CU's status was determined to be GREEN in a recent WSP re-evaluation (Grant et al. 2017) and was recommended for listing as <i>Not at Risk</i> by COSEWIC.</li> <li>The Widgeon CU status was determined to be RED in a recent WSP re-evaluation (Grant et al. 2017) and was recommended for listing as <i>Threatened</i> by COSEWIC</li> </ul> <p>Two populations make up this Outlook Unit:  <b>Harrison River:</b> Below average returns are expected for this CU. Given the uncertainty in age structure, both the 2015 and 2016 brood year were considered for this stock. Brood year effective female spawners (58,297 and 34,400) were lower than the recent median escapement (177,000), but similar to the WSP lower benchmark (40,000). However, given the exceptional escapements for this stock in recent years, and increases in productivity, predictions of returns are extremely uncertain. <b>CU Outlook 3.</b> (2018 Outlook Category was 4)  <b>Widgeon Creek:</b> Return data are not available for this CU. Based on escapement compared to the time series average, below average returns are expected for this CU. Brood year effective female spawners (58) was lower than the median escapement (360). <b>CU Outlook 1.</b> (2018 Outlook Category was 1)</p>
95. Summer-Raft  (CU: Kamloops-ES)	2	<ul style="list-style-type: none"> <li>This CU's status was determined to be AMBER in a recent WSP re-evaluation (Grant et al. 2017) and was recommended for listing as <i>Special Concern</i> by COSEWIC.</li> </ul> <p>Below average returns are expected for this CU. Brood year effective female spawners (8,800) were lower than the recent median escapement (15,700), but higher than the WSP lower benchmark (5,000). (2018 Outlook Category was 3)</p>
11. Fall – Cultus  (CU: Cultus-L)	1	<ul style="list-style-type: none"> <li>This CU's status was determined to be RED in a recent WSP re-evaluation (Grant et al. 2017) and was recommended for listing as <i>Endangered</i> by COSEWIC.</li> </ul> <p>Below average returns are expected for this CU. The smolt outmigration for this stock was the lowest recorded (1000 natural, 3000 hatchery origin), even with the hatchery program release of additional smolts in the creek below the lake (24,700). (2018 Outlook Category was 1)</p>
12. Fall – Portage  (CU: Seton-L)	1	<ul style="list-style-type: none"> <li>This CU's status was determined to be RED in a recent WSP re-evaluation (Grant et al. 2017) and was recommended for listing as <i>Endangered</i> by COSEWIC.</li> </ul> <p>Below average returns are expected for this CU. Brood year effective female spawners (17) were catastrophically lower than the recent median escapement (3,500), and orders of magnitude lower than the WSP lower benchmark (2,200). A relatively large escapement in 2014 (12,300) may contribute some 5 year olds to the return in 2019. (2018 Outlook Category was 1)</p>

Outlook Unit Sockeye	2019 Outlook Category	Comments
13. Fall – South Thompson  (CU: Shuswap-L)	2	<ul style="list-style-type: none"> <li>This CU's status was determined to be AMBER/GREEN in a recent WSP re-evaluation (Grant et al. 2017) and was recommended for listing as <i>Not at Risk</i> by COSEWIC.</li> </ul> <p>Below average returns are expected for this CU. Brood year effective female spawners (3,200) were lower than the cycle median escapement (8,800). A large escapement in 2014 (1,053,500) is expected to contribute some 5 year olds to the return in 2019. (2018 Outlook Category was 4)</p>
14. Fall – Birkenhead  (CU: Lillooet-Harrison-L)	2	<ul style="list-style-type: none"> <li>This CU's status was determined to be AMBER in a recent WSP re-evaluation (Grant et al. 2017) and was recommended for listing as <i>Special Concern</i> by COSEWIC.</li> </ul> <p>Below average returns are expected for this CU. Brood year effective female spawners (26,700) were lower than the cycle median escapement (38,700), but above the WSP lower benchmark (15,700). (2018 Outlook Category was 3)</p>
15. Fall – Lower Fraser  CUs: Harrison (U/S)-L; Harrison (D/S)-L)	1/3	<ul style="list-style-type: none"> <li>The Harrison (U/S) CU status was determined to be RED in a recent WSP re-evaluation (Grant et al. 2017) and was recommended for listing as <i>Endangered</i> by COSEWIC.</li> <li>The Harrison (D/S) CU status was determined to be Amber/Green in a recent WSP re-evaluation (Grant et al. 2017) and was recommended for listing as <i>Special Concern</i> by COSEWIC.</li> </ul> <p>Two populations make up this Outlook Unit:  <b>Weaver</b> (Harrison (U/S)): Below average returns are expected for this CU. Brood year effective female spawners (1,100) were lower than the recent median escapement (11,400) and an order of magnitude lower than the WSP lower benchmark (10,700). <b>CU Outlook 1.</b> (2018 Outlook Category was 1)  <b>Miscellaneous Harrison Lake rearing stocks</b> (Harrison (D/S)): Return data are not available for this CU. There is one consistently monitored spawning population in the CU (Big Silver Creek). Based on escapement to this system compared to the time series, average to above average returns are expected for this CU. Brood year effective female spawners (4,000) were higher than the median escapement (1,800). <b>CU Outlook 3.</b> (2018 Outlook Category was 3)</p>
16. Somass	3/4	<p>Somass sockeye consists of two CUs: Great Central Lake (GCL) and Sprout Lake (SL). The age of return ranges from 3 to 6 years with age-4 and -5 fish predominant (originating from the 2014 and 2015 brood years).</p> <p>Escapement for both stocks was below average for the 2014 brood year (5-year olds returning in 2019), and especially low in GCL. Along with poor ocean conditions, this resulted in very low age-4 returns to GCL in 2018. This likely means low age-5 returns in 2019, especially in GCL.</p> <p>Escapement for both stocks for the 2015 brood year was one of the biggest on record (4-year olds returning in 2019). The estimates of juvenile sockeye abundance for the 2017 sea-entry year are above average for the GCL stock and just below average for the SL stock. However, these estimates of juvenile abundance are more uncertain than usual due to changes in the smolt sampling program. Marine survival is expected to have improved in 2017—which was the main sea-entry year for the 2015 brood—due to La Niña conditions and dispersal of the 'blob'. Jack returns observed in 2018 were low at both sites but could be related to high smolt numbers (i.e., density-dependent mortality). Overall, an improved return of age 4<sub>2</sub> and 5<sub>3</sub> sockeye in 2019 should provide fishing opportunities for each sector, but with higher than normal uncertainty. (2018 Outlook Category was 2/3)</p>

Outlook Unit Sockeye	2019 Outlook Category	Comments
17. Henderson	2	<p>For the 2019 return, the two main contributing brood years are 2014 and 2015, and the two main contributing smolt years are 2016 and 2017. Spawner abundance was low in both contributing brood years. Surveys to estimate smolt abundance were not conducted in 2016 and 2017; however, based on assumed production from brood year spawners, we assume smolt abundance was low in both years. The marine survival rate for the 2016 smolt year was low. Therefore, expectations for Henderson sockeye return in 2019 are very low.</p> <p><i>(2018 Outlook Category was 2)</i></p>
18. WCVI - Other	2/3	<p>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 Henderson and Somass.</p> <p><i>(2018 Outlook Category was 2)</i></p>
19. Areas 11 to 13	2/3	<p>No systems are assessed in Area 11.</p> <p>Preliminary Sockeye returns in 2018 to the Nimpkish River (Area 12) were slightly below the 2014 brood year but above both the 4- and 12-year averages. Assessment of Quaste River escapement data (in Area 12) has not yet been completed, but indications are for an average return abundance.</p> <p>Preliminary Sockeye returns in Area 13, specifically the Phillips River, were average in 2018. The Heydon Creek Sockeye program (in Area 13) was also re-instituted in 2018 and preliminary counts are above the most recent 4-year average (from 2009-2012).</p> <p>For 2019, the only indication of marine survival comes from varied but somewhat improved returns of local Pink and Coho salmon returns in 2018 (same 2017 outmigration year as 2019 Sockeye). Consequently, the average to above average brood in 2015 and some mixed signals in marine survival conditions result in an outlook that is low to near target.</p> <p><i>(2018 Outlook Category was 2/3)</i></p>
20. Sakinaw	1	<p>Of the 78,878 smolts that left Sakinaw Lake in 2016 only three adult Sockeye returned in 2018. Marine survival continues to be extremely low; for the 2016 ocean entry year, the smolt-to-adult survival was 0.003% for hatchery-origin and 0.139% for wild-origin smolts. The 2018 return included 2 fish from captive brood and 1 natural origin spawner. Under this low survival rate, it is likely that there will be almost no adult Sockeye returning in 2019 from the 34,871 smolts enumerated in 2017. If marine survival is near the 4-year average, a total of 52 adults are expected; 23 natural origin and 29 from captive brood.</p> <p><i>(2018 Outlook Category was 1)</i></p>
21. Areas 7 to 10	1-1-2-2/3	<p>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 where rebuilding trends have been observed 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 and management plans given the Docee fence (Smith Inlet) is not operational. For 2019, the Outlook Category for Areas 7 and 8 is 1, for Area 9 is 2 and for Area 10 is 2/3.</p> <p><i>(2018 Outlook Category was 1/3)</i></p>

<b>Outlook Unit Sockeye</b>	<b>2019 Outlook Category</b>	<b>Comments</b>
22. Coastal Areas 3 to 6	2/3	Status is uncertain. Last Outlook noted that escapements were improving over the last cycle, but variable. Some very poor coastal sockeye escapements were seen in Area 6 in 2018. Limited assessment data for evaluation. (2018 Outlook Category was 2/4)
23. Babine Lake - Enhanced	2	Overall, expecting a low return in 2019 unless age-4 Sockeye return stronger than expected, as was the case in 2018 when more age-4 Sockeye returned relative to poor returns of age-3 observed in 2017. Low age-4 returns expected in 2019 based on very low age-3 returns in 2018. Modest abundance forecast in 2019 for age-5 Sockeye based on modest age-4 returns in 2018. (2018 Outlook Category was 2)
24. Skeena - Wild	2	Overall, expecting a low return in 2019. Return rates for Skeena -Wild are more variable than Babine Lake – Enhanced. Generally, poor abundance is forecast in 2019 for wild age-4 Sockeye based on poor age-3 returns in 2018. Variable age-5 returns expected in 2019 based on modest age-4 returns in 2018. Return rates have become more uncertain in recent years, with greater variability among the Skeena stock components. (2018 Outlook Category was 1/2)
25. Nass	2/3	Average to below average returns are expected. Kwinageese returns in 2018 were low, as expected given brood year escapements. (2018 Outlook Category was 2/3)
26. Haida Gwaii	3	Average returns are expected for 2019. Escapements over the past decade have generally been stable and at management targets. Status is uncertain for some systems. (2018 Outlook Category was 3)
27. Alsek	3	Based on brood year escapements above the MSY target range and stock-recruitment relations from historical records, a below average, but within the escapement goal range run is expected. This aggregate stock is dominated by lake and river type age 5 fish. 2019 Outlook Category is 3. (2018 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 2019 and well above escapement goals. Recent poor marine survival may influence this. This is an aggregate stock of lake and river type 5 year olds. 2019 Outlook Category is 4. (2018 Outlook Category was 4)
29. Taku - Wild	4	Based on stock-recruitment data, the 2019 run is expected to be below the 10 year average of 181,000 but well over the escapement point-goal of 75,000. This is an aggregate stock of lake and river type 5 year olds. 2019 Outlook Category is 4. (2018 Outlook Category was 4)
<b>Chinook</b>		
<b>101. Okanagan (NEW)</b>	1	Expectations for 2019 are for continued depressed abundance related to very low parental escapements, low marine and freshwater survival, and low productivity. Escapement information for 2018 is not yet available. COSEWIC recommended listing status as <i>Endangered</i> in 2017. (2018 Outlook Category was ND)

Outlook Unit Chinook	2019 Outlook Category	Comments
96. Fraser River Spring Run 4 <sub>2</sub>	1	Expectations for 2019 are for continued exceptionally depressed abundance due to low parental escapements in 2015, ongoing unfavorable marine and freshwater survival conditions and low productivity. Escapements in 2018 again declined compared to the parent brood escapements in 2014, and for those systems that escapement estimates are available, escapements were ~12% of the parental broods, and were far below estimated Sgen values for Spius, Coldwater and Nicola, despite hatchery supplementation. <i>(2018 Outlook Category was 1)</i>
97. Fraser River Spring Run 5 <sub>2</sub>	1	Expectations are for continued exceptionally low abundance related to depressed parental escapements and continuing unfavorable marine and freshwater survival conditions and low productivity. On average, escapements in 2018 were only 50% of the parental brood escapement level; several rivers escaped well under 100 fish. <i>(2018 Outlook Category was 1)</i>
98. Fraser River Summer Run 5 <sub>2</sub>	1	Expectations are for continued overall exceptionally low abundance related to low parental escapements, low marine and freshwater survival, and low productivity. Escapements in 2018 again declined compared to the parent brood escapements in 2013, and on average, attained ~40% of the parent brood. <i>(2018 Outlook Category was 1)</i>
99. Fraser River Summer Run 4 <sub>1</sub>	2	Marine survival conditions worsened for the 2018 return, and escapements were below parental levels in 2014 for all populations except Little River. Fecundity has been declining for stocks in this management unit, which is contributing to lower productivity than the long term average. Aggregate escapement appears to be ~50% of the parent brood escapement. <i>(2018 Outlook Category was 2)</i>
100. Fraser River Fall Run 4 <sub>1</sub>	2	Escapement estimates are not yet available for the Harrison (natural) and Chilliwack (hatchery) rivers and the forecasts for 2019 will be available in late winter. Current marine conditions and stock productivity appear to be unfavorable, although parental escapement in 2015 at Harrison was above the upper bound of the escapement goal (98,000). Thus, abundance is expected to be about average. Chilliwack hatchery production, marine survival, and recent fishery exploitation are expected to return sufficient abundance to achieve hatchery production objectives. <i>(2018 Outlook Category was 2)</i>
39. WCVI - Hatchery	3	Overall returns in 2019 will likely be similar to levels observed in 2018. Observed returns of earlier age classes and ocean indicators of marine survival suggest that the survival rate for the 2014 and 2015 brood years appear to be average, and indications (from abundant coho returns in 2018) are that the survival rate for the 2016 brood year/2017 sea entry year may be average to above average (age 3 in 2019). <i>(2018 Outlook Category was 3)</i>
40. WCVI-Wild	1	Chinook escapements into 'wild' rivers have been variable in recent years with returns to the Kyuquot area (Nootka-Kyuquot CU) continuing to outpace returns to the Clayoquot Sound area (SWVI CU). The latter continue to be of concern. This variability and low returns into Clayoquot is expected to continue in 2019. Wild WCVI Chinook remains a stock of concern. <i>(2018 Outlook Category was 1)</i>

Outlook Unit Chinook	2019 Outlook Category	Comments
41. Johnstone Strait Area (including mainland inlets)	Wild – 2 Hatchery – 2/4	Escapement monitoring on the Campbell/Quinsam system is ongoing; however, preliminary information for this hatchery indicator suggests a return in the 6,000-7,000 range, which is better than both the 5- and 10-year historic averages, but below return levels of 2016 and 2017. Early results for Phillips River Chinook show a significant decrease in the escapement compared to past years with an estimated 1,200 returning in 2018; the 5-year historic average for this stock is approximately 2,400. 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 range from below to above target (category 2/4). (2018 Outlook Category was 2/4)
42. Georgia Strait Fall (wild and small hatchery operations)	2/3	Adult Chinook returns to the Cowichan River in 2018 exceeded the target escapement of 6,500 adults for the third year in a row. The number of jacks in the population was much lower than 2017 while the preliminary age data suggest an even split between age-3 and age-4 adults. The 2019 outlook is for returns continuing near target, but note this may change depending on final escapement estimates and age composition. Wild production continues to drive the escapement with the proportion of hatchery fish in the population estimated at 10% for all age classes in 2018. <b>Outlook category 3.</b> A similar rebuilding trend has not been observed in the Nanaimo River where counts remain low and stable (<5,000). 2019 escapement is expected to remain low and stable. No info for the Squamish at this time. <b>Outlook category 2.</b> Significant variation between rivers can be expected due to variable freshwater and ocean conditions. (2018 Outlook Category was 2/3)
43. Georgia Strait Fall (large hatchery operations)	3	2018 returns to the Puntledge River are estimated at about 10,000 fall run chinook, continuing a modest rate of increase over the last four years. Returns to the Big Qualicum River tracked the four year average at 6,500. Stable production levels and modest survivals for several hatchery indicators suggest average returns are again likely for 2019. (2018 Outlook Category was 3)
44. Georgia Strait Spring and Summer	2	A survey of summer Chinook holding areas in the Nanaimo River produced a count of 288 fish in 2018 which was very similar to 2017. Puntledge summer Chinook came in close to the 4-year average of 820 fish. Rebuilding efforts for these populations are continuing. The summer run in Cowichan River was monitored with a DIDSON again in 2018 and preliminary results suggest the presence of approximately 100 adults. At these levels, rebuilding will take several generations even with improved survival. (2018 Outlook Category was 2)
45. Areas 7 and 8	3/4	2019 Bella Coola returns are expected to be average based on below average 2017 and above average 2018 returns. Other assessments are of poor quality. (2018 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 or are no longer conducted. 2019 Outlook Category 2 (Chuckwalla/Kilbella) and 4 (Wannock). (2018 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. (2018 Outlook Category was 2/3)

<b>Outlook Unit Chinook</b>	<b>2019 Outlook Category</b>	<b>Comments</b>
48. Nass	2/3	The 2019 return is highly uncertain after record low escapements in 2017 and low returns in 2018. There is generally low productivity among stream-type stocks in the north-west. <i>(2018 Outlook Category was 2/3)</i>
49. Haida Gwaii	ND	No recent assessments of Yakoun Chinook. <i>(2018 Outlook Category was ND)</i>
50. Skeena	2/3	Below average returns are expected for both summer and spring timed Skeena Chinook. The 2019 return is highly uncertain after record low escapements in 2017 but an increase to modest levels in 2018. There is generally low productivity among stream-type stocks in the north-west. Declining trends in smaller Skeena CU's were evident after 2016 but data regarding small components in 2018 were not available at the time of writing. <i>(2018 Outlook Category was 2/3)</i>
51. Alsek	2/3	Based on brood year escapements that were below average but within and above the MSY target range and recent sibling survival data, a below average run within the escapement goal range is expected. Alsek Chinook are stream type dominated by 5- and 6-year olds. <i>(2018 Outlook Category was 2)</i>
52. Stikine	2	The last two years were the poorest runs on record and well below escapement goals. 2019 is expected to again be well 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. Stikine Chinook are stream type dominated by 5- and 6-year olds. <i>(2018 Outlook Category was 2)</i>
53. Taku	2	The last two years were the poorest runs on record and well below escapement goals. 2019 is expected to again 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. Taku chinook are stream type dominated by 5 and 6 year olds. <i>(2018 Outlook Category was 2)</i>
54. Yukon	2	The Canadian-origin return of Yukon River Chinook salmon in 2019 is anticipated to be below average. 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 60% of the time over the last decade. Five and 6 year-old fish dominate returns. Production resulting from a poor spawning escapement in 2013 (28,700) and above average escapement in 2014 (63,300) is anticipated to lead to a below normal return of 6 year olds and an above average return of 5 year olds in 2019. Recent total production observed in Canadian-origin Yukon River Chinook salmon stocks is well below past years: averaging 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 2019. <i>(2018 Outlook Category was 2)</i>
<b>Coho</b>		
<b>102. Interior Fraser (NEW)</b>	1	This OU was formed by merging OU55: Mid- and Upper Fraser with OU56: Thompson. Ongoing poor marine conditions continue to hamper rebuilding. Escapement programs for 2018 are just underway, and it is too early to predict return abundance. A formal forecast will be produced in the spring. <i>(2018 Outlook Category was 1)</i>
57. Lower Fraser	1	Ongoing poor marine conditions continue to hamper rebuilding. Escapement programs for 2018 are just underway, and it is too early to predict return abundance. <i>(2018 Outlook Category was 1)</i>



Outlook Unit Coho	2019 Outlook Category	Comments
58. WCVI	3	Information to forecast Coho returns is limited, so there is considerable uncertainty in this assessment. For 2019, most of the return will originate from the 2016 brood year that went to sea in 2018 which appeared to be somewhat favourable to rearing salmon. For most WCVI areas, Coho spawning populations have been relatively stable. <i>(2018 Outlook Category was 2/3)</i>
59. Area 12	2/3	Returns in 2018 appear varied throughout the area and many programs are still ongoing. Preliminary returns to the Keogh River indicator in Area 12 suggest that marine conditions for the 2017 smolt outmigration were poor, but improved slightly over recent years. The formal forecast for Coho has not yet been finalized but will likely be similar to the recent 3-year average. Smolt production in 2018 was slightly below average for Keogh River (62,213), although only 230 adults contributed to this recruitment, indicating extremely high freshwater productivity. This high freshwater productivity may continue to buffer adult returns against continued poor marine survival. <i>(2018 Outlook Category was 2/3)</i>
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. It is very preliminary, but both systems are seeing average, or slightly better than average returns. General observations to date suggest better than forecasted returns across the area. Village Bay Creek on Quadra Island is being monitored by video and has observed higher than expected numbers of Coho through the fence. The wild indicator is Black Creek (included below in the Georgia Strait OU). At present, expectations for 2019 are similar to 2018 and will be updated once the formal forecasts are completed in March. <i>(2018 Outlook Category was 2/3)</i>
61. Georgia Strait	2	Hatchery indicators for this Outlook Unit are Quinsam and Big Qualicum, where 2018 preliminary returns are average, or slightly above average. The wild indicator is Black Creek. In 2017, below average smolt production was observed (34,473 smolts). As of November 1, 2018, 650 adult Coho have been counted through the fence, but low water levels through much of October have likely delayed migration. With recent rains, the daily migration has increased and monitoring is ongoing. Black Creek smolt production in 2018 was 40,322; still below average, but a slight improvement over 2017 production. Preliminary observations from Black Creek in 2018 have shown an average jack return. As a result, at present the outlook for 2019 is similar to 2018 and will be updated once formal forecasts are complete in March. <i>(2018 Outlook Category was 2)</i>
62. Areas 7 to 10	ND	Lower productivity over previous years is forecasted based on low returns in 2018 for both interior and coastal coho populations and continuance of lower marine survivals. However, there is very little data to review to develop an overall assessment. <i>(2018 Outlook Category was ND)</i>
63. Areas 5 and 6	2	Lower productivity over previous years is forecasted based on low Area 6 returns and continuance of lower marine survivals. <i>(2018 Outlook Category was ND)</i>
64. Area 3	2/3	Lower productivity over previous years is forecasted but an improvement over the 2018 return is anticipated. The low return in 2018 is a result of both lower marine survivals and a low 2015 brood year escapement. <i>(2018 Outlook Category was 3/4)</i>

<b>Outlook Unit Coho</b>	<b>2019 Outlook Category</b>	<b>Comments</b>
65. Haida Gwaii - E (Area 2 East)	2	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 observed at Tlell and unknown returns to the Deena in 2018. (2018 Outlook Category was 3/4)
66. Haida Gwaii - N (Area 1)	ND	No recent assessments. (2018 Outlook Category was ND)
67. Haida Gwaii - W (Area 2 West)	ND	No recent assessments. (2018 Outlook Category was ND)
68. Skeena	2/3	Lower productivity over previous years is forecasted based on low returns in 2018 for both interior and coastal coho populations and continuance of lower marine survivals. (2018 Outlook Category was 4)
69. Skeena – High Interior	2/3	Lower productivity over previous years is forecasted; however, 2018 escapements to the Upper Skeena are unknown at this time. (2018 Outlook Category was 4)
70. Alsek	3	Only a partial weir count is carried out. Brood year counts were slightly below average. Run is dominated by 4 year olds. (2018 Outlook Category was 3)
71. Stikine	ND	Reliable brood year escapement data are limited and ancillary observations are sometimes contradictory. (2018 Outlook Category was ND)
72. Taku	3	Based on preliminary smolt abundance in 2018 combined with recent smolt-to-adult survival rates, a below average run near the management target of 70,000 is expected for 2019. Run is dominated by 3 year olds. (2018 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 suggest 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. It is known that coho salmon primarily return as 4-year-olds and overlap in run timing with fall chum salmon. The major contributor to the 2019 run will be age-4 fish returning from the 2015 parent year. (2018 Outlook Category was ND)
<b>Pink</b>		
74. Fraser - Odd only (CU: Fraser River)	2	Below average returns are expected in 2019 relative to the average of 13.4 million (1959-2013) based on brood year fry out-migration from the Fraser River in 2018 (estimated to be 192 M). This is the lowest out-migration since the fry enumeration method was updated in 1968 and less than half the long term average of 431 M fry. (2017 Outlook Category was 3.)
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 reviewed. (2017 Outlook Category was ND.)
76. WCVI - Odd & Even	ND	No assessment information is available. (2017 Outlook Category was ND; 2018 Outlook Category was ND)

Outlook Unit Pink	2019 Outlook Category	Comments
77. Areas 11 to 13 - Odd & Even	2/3	<p>Since 2015, there has been only limited assessment of Pink Salmon in Areas 12 and 13 and no assessment in Area 11.</p> <p>Even Year: Returns in 2018 were low in most systems monitored and below the even year 3 generational average except Amor De Cosmos. Preliminary returns in Area 12-13 were varied with some systems showing an improvement over the 2016 brood including Amor De Cosmos, Ahta, Phillips, Quinsam and Salmon Rivers.</p> <p>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.</p> <p>Historically, Pink returns to this area have been highly variable and expectations continue to be highly uncertain. Based on recent returns, the outlook for 2019 is for below to near target returns. (2017 Outlook Category was 2/3; 2018 Outlook Category was 2/3)</p>
78. Georgia Strait - West - Odd & Even	2	<p>These are primarily odd year dominant pink stocks. Returns in 2017 were average to below average and generally lower than brood returns in 2015 with the exception of Nanaimo River. Assuming similar marine survival, the outlook for 2019 is for below target returns. Due to the high variability of Pink Salmon, these expectations are highly uncertain. (2017 Outlook Category was 2/3; 2018 Outlook Category was 2)</p>
79. Georgia Strait - East - Odd & Even	2	<p>These are primarily odd year dominant stocks. Assessment information on Pink Salmon in this area is limited. Escapements in 2017 were much lower than brood returns in 2015 by an order of magnitude. Assuming continuation of poor marine survival, results for 2019 returns are expected to be below target. Due to the high variability of Pink Salmon, these expectations are highly uncertain. (2017 Outlook Category was 2/3; 2018 Outlook Category was 2)</p>
80. Areas 7 to 10 - Odd & Even	1/4	<p>Low returns are expected in Area 7 and average to above average returns in Area 8. The odd year Bella Coola/Atnarko stock exceeded escapement target in 2017. Odd year returns are expected to be above average if marine survival is good. (2017 Outlook Category was 1/4; 2018 Outlook Category was 2/3)</p>
81. North Coast Areas 3 to 6 - Odd & Even	2/3	<p>Returns are expected to be mostly low to average, based on brood year escapements. Opportunities for directed harvest are expected. (2017 Outlook Category was 4; 2018 Outlook Category was 2/3)</p>
82. Haida Gwaii - Even	NA	<p>Haida Gwaii stocks are primarily even year stocks with little to no returns in odd years. No directed opportunities are expected. (2017 Outlook Category was NA; 2018 Outlook Category was 2)</p>

Outlook Unit Chum	2019 Outlook Category	Comments
<b>Chum</b>		
83. Fraser River (CUs: Fraser Canyon and Lower Fraser)	3	In 2017, the Fraser River Chum Salmon spawning escapement fell below the 800,000 goal for the first time since 2010. Returns in 2019 will primarily originate from the 2015 escapement (0.95 M spawners). The warm Pacific Ocean “Blob” that persisted through the springs of 2014 and 2015 was subsequently followed by El Niño conditions that lasted through the first half of 2016 when fry from the 2015 escapement entered the marine environment; the impact of these environmental conditions in the spring of 2016 on Fraser Chum productivity and returns in 2019 is unknown. However, productivity for the broods that entered the ocean in 2014 and 2015 (when the Blob persisted) appears to be below long-term average. Escapement assessments in 2018 are currently underway; an estimate of the 2018 spawning escapement will be available by April 2019. The October 22, 2018 in-season estimate of the Fraser Chum terminal return was approximately 0.77 M fish with a 36% probability the run will exceed the spawning escapement goal. <i>(2018 Outlook Category was 4)</i>
84. WCVI	2/3	Returns of WCVI Chum in 2019 will likely be similar to the low levels observed in 2018 and 2017. The ocean entry years 2015-2016 likely resulted in below average survival for chum. This will limit both the age 4 (dominant age class) and age 5 contributions to the 2019 return. In most WCVI areas, Chum populations have been relatively depressed in recent years. <i>(2018 Outlook Category was 2/3)</i>
85. Johnstone Strait Area and Mainland Inlets (Areas 11 to 13)	2/3	<p>Summer run Chum Salmon stocks in 2018 appear to have done poorly relative to recent years and remained below average throughout the area. This will likely continue through 2019.</p> <p>Fall run Chum returns in 2018 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 below average 2014 brood year and 2015 ocean entry year. This coincides with poor survivals encountered by local Pink and Coho Salmon stocks from the same ocean entry year.</p> <p>For the 2019 return, below average parental brood abundances in 2015 and observations of poor survival for Coho and Pink from the 2016 ocean entry year will likely mean below average return of age 4 Chum in 2019. The strong brood return in 2016 and some evidence of improved survival from ocean entry in 2017 means above average age 3 returns are likely in 2019.</p> <p>The resulting outlook for 2019 is Chum returns below average to near target. Expect variability in Chum returns. <i>(2018 Outlook Category was 3)</i></p>
86. Georgia Strait	3	<p>Chum enumerations in this area are currently underway. Preliminary escapement data for 2018 suggest below target escapements for systems in mid to northern Georgia Strait. Returns in Nanaimo, Cowichan and Goldstream were above target.</p> <p>For 2019, abundance is expected to follow a similar pattern with stocks in the southern part of Georgia Strait such as Cowichan, Nanaimo, and Goldstream forecast above target escapement. Mid-Island systems (Puntledge, Little Qualicum, Big Qualicum) are expected to show improvement to near target escapement levels. Jervis Inlet stocks are forecast to be well below target in 2019. <i>(2018 Outlook Category was 3)</i></p>

Outlook Unit Chum	2019 Outlook Category	Comments
87. Coastal Areas 5 & 6	1/2	Low returns are forecasted based on low brood year escapements. Returns of Area 6 enhanced Kitimat Chum remain uncertain, following a multi-year trend of poor ocean survival. <i>(2018 Outlook Category was 1/3)</i>
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. <i>(2018 Outlook Category was 2/4)</i>
89. Skeena-Nass	1/2	Ongoing low returns expected from poor brood year escapements. <i>(2018 Outlook Category was 1/2)</i>
90. Areas 7 to 10	2/4	Wild brood year escapements were generally good in Area 8 but low in other areas. Returns of enhanced stocks remain dependent upon variable ocean survivals. <i>(2018 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 70,000-104,000 Chum Salmon and the goal has consistently been met since the early 2000s. Escapements in 2014 and 2015—the principal brood years for 5 and 4 year-olds, respectively, that will contribute to the 2019 run—were well above their minimum goals. An above-average run is expected in 2019. <i>(2018 Outlook Category was 4)</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 22,000-49,000 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 2014 and 2015—the principal brood years for 5 and 4 year-olds, respectively, that will contribute to the 2019 run—were very weak at 7,304 and 8,351, respectively. A precautionary approach will likely be taken in 2019 given the poor performance of this stock in recent years. Fishing opportunities could be restricted. <i>(2018 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. 2019 Outlook Category is 2. <i>(2018 Outlook Category was 2)</i>

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**Appendix 1. Outlook Units and associated Conservation Units.**

OU No.	Outlook Unit Name	Conservation Unit
<b>Sockeye</b> (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
		SEL::Muriel
SEL::Nitinat		

OU No.	Outlook Unit Name	Conservation Unit
		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
		SEL::Freedra/Brodie
		SEL::Hartley Bay

OU No.	Outlook Unit Name	Conservation Unit
		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::Tsintack Lakes
		SEL::Tuno Creek East
		SEL::Tuno Creek West
		SEL::Tewartz
		SEL::Tyler Creek
		SEL::Wale Creek

OU No.	Outlook Unit Name	Conservation Unit
		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
		SEL::Marie
		SEL::Mathers
		SEL::Mercer

OU No.	Outlook Unit Name	Conservation Unit
		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
<b>Chinook</b>		
<b>101</b>	<b>Okanagan</b>	<b>CK::Okanagan</b>
96	Fraser River Spring Run 4 <sub>2</sub>	CK::South Thompson-Besette Creek
		CK::Lower Thompson-spring timing-age 1.2
97	Fraser River Spring Run 5 <sub>2</sub>	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 <sub>2</sub>	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 <sub>1</sub>	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 <sub>1</sub>	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
44	Georgia Strait Spring and Summer	CK::Vancouver Island-Georgia Strait_su_0.3

<b>OU No.</b>	<b>Outlook Unit Name</b>	<b>Conservation Unit</b>
		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
<b>Coho</b>		
<b>102</b>	<b>Interior Fraser</b> – <b>Mid and Upper – Fraser</b> – <b>Thompson</b>	<b>CO::Fraser Canyon</b>
		<b>CO::Middle Fraser</b>
		<b>CO::Lower Thompson</b>
		<b>CO::North Thompson</b>
		<b>CO::South Thompson</b>
57	Lower Fraser	CO::Lillooet
		CO::Lower Fraser-A

OU No.	Outlook Unit Name	Conservation Unit
		CO::Lower Fraser-B
58	WCVI	CO::Clayoquot
		CO::Juan de Fuca-Pachena
		CO::West Vancouver Island
		CO::Homathko-Klinaklini Rivers
59	Area 12	CO::Nahwitti Lowland
		CO::East Vancouver Island-Johnstone Strait-Southern Fjords
60	Area 13 – North	CO::Southern Coastal Streams-Queen Charlotte Strait-Johnstone Strait-Southern Fjords
		CO::Boundary Bay
61	Georgia Strait	CO::East Vancouver Island-Georgia Strait
		CO::Georgia Strait Mainland
		CO::Howe Sound-Burrard Inlet
		CO::Bella Coola-Dean Rivers
62	Areas 7 to 10	CO::Rivers Inlet
		CO::Smith Inlet
		CO::Brim-Wahoo
63	Areas 5 and 6	CO::Douglas Channel-Kitimat Arm
		CO::Hecate Strait Mainland
		CO::Mussel-Kynoch
		CO::Northern Coastal Streams
		CO::Lower Nass
64	Area 3	CO::Portland Sound-Observatory Inlet-Portland Canal
		CO::Skeena Estuary
		CO::Upper Nass
		CO::Haida Gwaii-East
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
<b>Pink</b> (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
79	Georgia Strait – East – Odd & Even	PKE::Georgia Strait
		PKO::Georgia Strait

<b>OU No.</b>	<b>Outlook Unit Name</b>	<b>Conservation Unit</b>
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
<b>Chum</b>		
83	Fraser River	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
		CM::Rivers Inlet
		CM::Smith Inlet
		CM::Spiller-Fitz Hugh-Burke



OU No.	Outlook Unit Name	Conservation Unit
		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. Definitions of acronyms used in this document.**

Acronym	Expanded Form
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
SEL	Sockeye salmon – Lake (Conservation Unit type)
SER	Sockeye salmon – River (Conservation Unit type)
SWVI	Southwest Vancouver Island
TTC	Trans-boundary Technical Committee
US	United States of America
WCVI	West Coast Vancouver Island

# CITATION

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