# LIMIT REFERENCE POINTS AND WILD SALMON POLICY RAPID STATUS SUMMARY: 2024
# FRASER –SUMMER 1.3 CHINOOK STOCK MANAGEMENT UNIT

## Context

**A key recommendation from a CSAS peer review process on Pacific Salmon Limit Reference Points (LRPs) is 'CU [conservation-unit] status-based LRPs' be used to meet the Fish Stocks provisions of the *Fisheries Act*** (DFO, 2022; Carrie. A. Holt et al., 2023; K. Holt et al., 2023)**, which was supported nationally** (DFO, 2023)**.** LRP's are assessed for Stock Management Units (SMUs), which can include one or more conservation units (CUs) (i.e., CUs are nested within SMUs). Using this approach, serious harm to a SMU is identified when any component CU zone drops into the Wild Salmon Policy (WSP) *Red* zone. Under this definition, the CU status-LRP is '100% of CUs with statuses above *Red* status'. The implications are that if a single CU is the *Red* status zone, the SMU is assessed as being below its LRP, which in turn triggers a DFO rebuilding plan for the SMU.

## Forewords

Expert reviewers expressed concerns that the Wild Salmon Policy Rapid Status Algorithm does not account for changes in spawner distribution within CUs. Because the scanner only uses total CU spawner abundances and/or trends in abundances, it assumes that CUs with even versus uneven spawner distributions relative to the productivity of each component population are equally healthy. Declining evenness in spawner distribution within a CU may signal a productivity decline, but relatively large and productive populations can temporarily mask a decline when solely using total CU abundance to estimate status.

## Indigenous Knowledge

The data used in the current assessment time series do not include spawner abundance observations prior to colonization of Indigenous land. Significant modifications to the landscape, climate, and fishing practices that impact long term trends occurred before standardized spawner-escapement surveys for this SMU were developed.

## Enumeration Data

The Summer 1.3 Chinook SMU contains six CUs (Lower Fraser-Upper Pitt; Lower Fraser; Middle Fraser - Portage; Middle Fraser; South Thompson; North Thompson). These six CUs comprise of a total of 39 systems, 21 of which are included as persistent sites in this assessment, and 3 are excluded due to enhancement (Table 1, See enhancement section and Figures A.1-A.5 in Appendix A for CU-specific release data). The data used in this assessment were described in detail in Dionne et al. (2023). The last integrated status assessments this SMU occurred for return year 2012 (DFO, 2016). Some of the data

were also recently used in the Fraser Chinook Recovery Potential Assessments (Dionne et al., 2023).

The spawner enumeration methods vary among the CUs within this SMU. Lower Fraser-Upper Pitt data were collected by visual surveys with a peak count expansion factor applied. Visual survey coverage ranged from moderate effort (1-4 surveys) to high effort (> 5 surveys) from 2002-2023. Lower Fraser data were collected by visual surveys with a peak count expansion factor applied. Visual survey coverage was moderate to high effort from 2005-2023. Middle Fraser – Portage Fall 1.3 data were primarily collected by visual surveys using a peak count expansion factor. Visual survey coverage ranged from moderate to high effort from 2000-2023. Middle Fraser data was primarily collected by visual surveys using a peak count expansion factor. Visual survey coverage ranged from moderate to high effort from 1995-2023. A Mark-recapture program was implemented for a single system (Chilko River) within the Middle Fraser CU in 2010. Historical data (1995-2010) have since been calibrated to reflect the high precision method. South Thompson data were primarily collected by visual surveys using AUC or applying a peak count expansion factor. Visual survey coverage ranged from moderate effort to high effort from 1999-2023. A single system (Salmon River) within the South Thompson CU was enumerated using a fixed-site weir from 1999-2023. North Thompson data were collected by visual surveys and applying a peak count expansion factor. Visual survey coverage ranged from moderate to high effort from 1996-2023.

Key steps in the data processing of this data set includes assessing data quality, which are described in detail in Pestal et al. (2023). Data quality is assessed based on the number and completeness of surveys, coverage of the spawning period, visibility and reliability records, and methodology.

The average spawner data quality is considered moderate throughout the time series for all CUs, with occasional high-quality data where SONAR or resistivity counters have been implemented. For Lower Fraser SU 1.3, most sites were considered data deficient, resulting in a limited time series with acceptable data. Similarly, Lower Fraser – Upper Pitt SU1.3 had a limited time series with sufficient quality data.

**Relative Abundance Benchmarks:**

During the recent CSAS process for the Yukon Chinook Fish Science Response Report (June 2025), authors and reviewers advocated for using 20% of the carrying capacity ($S_{max}$) as the lower biological benchmark instead of $S_{gen}$. 20% of $S_{max}$ is an ecologically based objective that is derived from the carrying capacity of a CU rather than a harvest-based objective, and is generally more conservative than $S_{gen}$, which aligns with the precautionary principle. Previous CSAS publications have also suggested using 20% $S_{max}$ as an alternative to $S_{gen}$ for spawner abundances, especially when there is limited stock-recruit data available (Holt et al. 2009). This modification to the lower biological benchmark was also implemented in the Fraser Spring 1.2 Chinook 2024 Rapid Status Assessment and FSRR, which was recently approved by CSAS reviewers for publication. Note that for the Spring 1.3 CUs presented in this review, new relative abundance benchmarks have not yet been calculated, but will be included in the upcoming FSAR and Research document as part of the next CSAS process for Fraser Spring 1.3 and Summer 1.3 SMUs. Therefore, the benchmarks summarized in Table 2 are based on the 2023 Rapid Status Assessment and are subject to change. Additionally, relative abundance benchmarks do not impact the status outcome for these CUs because they are either assessed using relative index data, which rely on trend metrics, or escapements are well below the absolute abundance lower benchmark of 1,500 spawners.

**Table 1.** Conservation Units (CUs) included in this Stock Management Unit (SMU) and lists of the streams/populations within each CU used in the Rapid Status Assessment. Streams have their NuSEDS population identifications in brackets.

| CU No# | CU Name | Streams (Population ID) | Enhanced Streams Excluded (Population ID) | Timeseries |
|---|---|---|---|---|
| CK-05 | Lower Fraser – Upper Pitt SU 1.3 | Upper Pitt River (47921) | | 2002-2024 |
| CK-06 | Lower Fraser River SU 1.3 | Big Silver Creek (46076) | Chilliwack River (46985) | 2005-2024 |
| CK-09 | Middle Fraser River-Portage FA 1.3 | Portage Creek (47189) | | 2000-2024 |
| CK-11 | Middle Fraser SU 1.3 | Cariboo River (46891)<br>Chilko River (46851)<br>Elkin Creek (46871)<br>Kuzkwa River (45555)<br>Middle River (44564)<br>Nechako River (46001)<br>Pinchi Creek (45547)<br>Stellako River (46021)<br>Tachie River (45550)<br>Taseko River (2507) | Quesnel River (468810) | 1995-2024 |
| CK-14 | South Thompson SU 1.3 | Eagle River (46366)<br>Scotch Creek (46296)<br>Seymour River (46336) | Salmon River (46407) | 1999-2024 |
| CK-19 | North Thompson SU 1.3 | Barriere River (46608)<br>Clearwater River (46688)<br>Lemieux Creek (46648)<br>Mahood River (46708)<br>Raft River (46718) | | 1996-2024 |

**Table 2.** Relative abundance-based benchmarks by Conservation Unit (CU). The upper benchmarks are 85% $S_{MSY}$ and the lower benchmarks are $S_{gen}$. Upper Benchmarks are multiplied by 1.1 in the algorithm.

| CU Name | Benchmark | p50 |
|---|---|---|
| Lower Fraser – Upper Pitt SU 1.3 | 85% $S_{MSY}$ | 965 |
| Lower Fraser – Upper Pitt SU 1.3 | $S_{gen}$ | 247 |
| Lower Fraser River SU 1.3 | 85% $S_{MSY}$ | 1,244 |
| Lower Fraser River SU 1.3 | $S_{gen}$ | 316 |
| Middle Fraser River-Portage FA 1.3 | 85% $S_{MSY}$ | 1,316 |
| Middle Fraser River-Portage FA 1.3 | $S_{gen}$ | 333 |
| Middle Fraser SU 1.3 | 85% $S_{MSY}$ | 19,652 |
| Middle Fraser SU 1.3 | $S_{gen}$ | 4,692 |
| South Thompson SU 1.3 | 85% $S_{MSY}$ | 1,986 |
| South Thompson SU 1.3 | $S_{gen}$ | 504 |
| North Thompson SU 1.3 | 85% $S_{MSY}$ | 7,481 |
| North Thompson SU 1.3 | $S_{gen}$ | 1,756 |

## Enhancement Data

The agreed approach to categorize enhancement is to assess by system or site based on Salmonid Enhancement Program records where at least three generations of enhancement data after 2000 are available (DFO 2016b). Sites with greater than 25% mean hatchery-origin contribution or greater than 25% of years enhanced should be ranked as high (DFO 2016b). Figures A.1-A.6 in Appendix A show hatchery releases by life-stage for enhanced systems within each CU.

## WSP Rapid Status Summary

**Stock Management Unit (SMU) Limit Reference Point (LRP) status and narrative based on expert consensus**[1]

There are six CUs in the Summer 1.3 Chinook SMU, and it is designated as **2 Red, 3 Amber, and 1 Data Deficient** , placing this SMU **below the LRP** in terms of WSP rapid status (Figures 1-11 & Table 3).

### Lower Fraser-Upper Pitt SU 1.3

During the January 2025 expert review meeting, it was noted that the area currently surveyed (Blue Creek) does not represent the entire spawning distribution of the population. This area is also subject to drought conditions that may affect fish migration, however, while changing the confidence rating for this CU's status was discussed it was concluded that it should not be changed at this time.

The addition of 2024 data did not change the status of this CU; however, the short term generation trend has shown a slight decline between 2023-2024.

[1] Consensus: general agreement of group as a whole, or absence of evidence-based opposition to conclusions. Determined by the "weight of evidence" (scientific data, information, and analysis ) where multiple results are reported. In the event of disagreements, equally plausible conclusions can be reported. Dissenting views must be clearly described in the narrative.

## Lower Fraser SU 1.3

During the January expert review meeting, it was discussed whether to apply absolute abundance metrics to this CU to default to Node 17 (*Red* with *Medium* confidence) based on the confidence that there are less than 1,500 spawners. There was no strong consensus in favour of this change since there are many systems with no estimates available in this CU. A potential solution discussed was to modify the start year of the time series to include Cogburn, Tipella and Sloquet Creeks, however, this would shorten the overall timeseries.

The status for 2024 remains data deficient because Chilliwack River is excluded due to high enhancement (Appendix A, Figure A.3) and there is not a long enough escapement time series available for Big Silver Creek to calculate trend metrics.

## Middle Fraser River – Portage FA 1.3

No additional comments were provided.

## Middle Fraser River SU 1.3

During the January 2025 expert review meeting, it was noted that the Quesnel River population is likely the system driving down the percent change and long term trend metrics for this CU. However, after comparing the timeseries of spawner escapements for the contributing systems in this CU, the Quesnel River population alone is not enough to account for the generally negative trend. Chilko is the largest population and has also experienced declines since 1995.

For the 2024 assessment, Quesnel River was excluded due to consistent enhancement up to brood year 2004 (Appendix A, Figure A.4). Additional sensitivity tests were conducted to evaluate the impact on status if Quesnel remained included, but the start year was adjusted to 2008 to account for the enhanced years. This test resulted in the same output of *Amber* status with low confidence. For this reason, the decision was to remove Quesnel in favour of having a longer time series for the CU, which also includes more natural spawner data for the Chilko indicator population.

## South Thompson SU 1.3

Participants in the January 2025 expert review meeting expressed specific concern for this CU because the spawner abundances are dominated by the Eagle River Chinook population. Eagle River is very productive relative to the other systems that contribute to the CU-level spawner abundance total, thus trends in the Eagle River can mask trends in other systems within the CU. Additionally, the Salmon River (a drought-prone system with declining Chinook abundances) was excluded from the spawner abundances that contribute to this CU due to high hatchery influence (Appendix A, Figure A.6). As a result, participants discussed the potential to use a spawner distribution metric to provide additional information about smaller populations whose trends are masked by large ones. Increasing efforts to determine the hatchery influence in the Salmon River was also discussed. The Salmonid Enhancement Program (SEP) does not currently mark fish in the Salmon River, but they have started parental based tagging (PBT). PBT is a method that estimates the proportion of unmarked hatchery spawners by using genetics to identify hatchery-origin spawners based on genetic samples of the parents that were spawned in the hatchery in previous years. Obtaining sampling rates from SEP may allow a natural origin spawner estimate to be calculated. Another possible solution to include additional systems was to infill Scotch Creek estimates so that it does not get filtered out, which would require shortening the time

series to begin around 2008. Ultimately, it was concluded that infilling would likely not have much influence on the overall status because Scotch Creek escapes much fewer spawners than Eagle River.

For the 2024 assessment, no additional changes were made to the systems included or the start year for the time series. The status remains *Amber* with low confidence. There is ongoing work to determine a natural spawner estimate for Salmon River that can be applied in future assessments.

### CK-19 North Thompson SU 1.3

There were some concerns over the *Amber* status assignment for this CU due to habitat and climate threats experienced by some of the component populations. It was recommended to determine if the Clearwater River population is the main contributor to the upward trend in status for this CU, as it may be masking habitat issues related to the smaller populations that may be in decline. Specifically, Lemieux Creek was mentioned as an example of a stream that is subject to severe drought conditions and other habitat issues. However, fish may facultatively spawn in the mainstem of the North Thompson River when water conditions are low and hot in the creeks, and it is unknown what proportion of fish may attempt to spawn in the mainstem (due to high turbidity), and what the relative juvenile production difference is between creek versus mainstem spawning habitats. Thus, more research is required to understand the degree to which low and hot water in the creeks changes spawner distribution and success, and the overall population-level impact of these conditions on creek-spawning chinook.

For the 2024 assessment, no additional changes were made to the systems included or the start year for the time series. The status remains *Amber* with low confidence. There is ongoing work to develop a spawner distribution metric for future assessments.

**Future work:** Future work for this SMU is 2-fold. 1) For CUs without facultatively spawning populations in turbid mainstem habitats, it is recommended we estimate the evenness of spawner distribution by examining population-specific returns relative to their expected productivity, and these values can be used to develop a spawner distribution metric. 2) For the North Thompson SU 1.3 CU, it is recommended we determine the proportion of returning fish that attempt to use turbid mainstem habitats for spawning when creek conditions are poor, and the success of mainstem spawning and rearing habitat relative to creek spawning.

**Table 3**. Wild Salmon Policy (WSP) Rapid Statuses for 2024. For background, refer to Appendix B.

| CU # | **CU Name** | **WSP Rapid Status (YYYY)** | **WSP Rapid Status Node and Pathway** |
|---|---|---|---|
| **CK-05** | **Lower Fraser – Upper Pitt SU 1.3** | **RED, MEDIUM** | The recent year's status (2024) is designated *Red with a medium* confidence based on the algorithm. The data could be not assessed as Absolute Abundance. The recent generational average is 33 spawners and is below 79% of the long term average (Node 17; Figure 2, Table 4). This *Red* status has been consistent throughout the status time series from 2020 to 2024 (Figure 1). |
| **CK-06** | **Lower Fraser River SU 1.3** | **DATA DEFICIENT** | The recent year's status (2024) is designated based on the algorithm. The CU is data deficient. (Figure 3). |

| | | | |
|---|---|---|---|
| **CK-09** | **Middle Fraser River-Portage FA 1.3** | **RED, MEDIUM** | The recent year's status (2024) is designated *as Red* with *medium* confidence based on the algorithm. (Figure 4) The data could not be assessed as Absolute Abundance. The recent generational average is 68 spawners and is below 79% of the long term average (Node 17; Figure 5. Table 5). This Red status has remained consistent since 2014 and matches the Red WSP integrated status assessment in 2012 (Figure 4). |
| **CK-11** | **Middle Fraser SU 1.3** | **AMBER, LOW** | The recent year's status (2024) is designated *Amber with a low* confidence based on the algorithm (Figure 6). The data could be not assessed as Absolute Abundance. The recent generational average is 11,807 spawners. The generational average falls between the long term trend metric lower and upper thresholds and is above the percent change metric threshold (Node 65; Figure 7, Table 6). The status was *Red* from 2016-2022 (Figure 6). The 2012 WSP Integrated Status was *Amber* (DFO 2016a). |
| **CK-14** | **South Thompson SU 1.3** | **AMBER, LOW** | The recent year's WSP rapid status (2024) is *Amber* with *Low* confidence. The recent generational average is 945 spawners. The generational average falls between the long term trend metric lower and upper thresholds and is above the percent change metric threshold (Node 65; Figures 8-9, Table 7). The absolute abundance and relative abundance benchmark metrics could not be applied because the time series is largely based on relative indices of abundance. The status has been *Amber* throughout the time series from 2013 to 2022. The 2012 WSP Integrated Status was *Red/Amber* (DFO 2016a). |
| **CK - 19** | **North Thompson SU 1.3** | **AMBER, LOW** | The recent year's WSP rapid status (2024) is *Amber* with *Low* confidence. The recent generational average is 4,188 spawners. The generational average falls between the long term trend metric lower and upper thresholds and is above the percent change metric threshold (Node 65) (Figure 10-11, Table 8). The absolute abundance and relative abundance benchmark metrics could not be applied because the time series is largely based on relative indices of abundance. The Amber status has remained consistent throughout the time series, with the exception of 2017 which was from *Red* with *medium* confidence. The 2012 WSP Integrated Status was *Red/Amber* (DFO 2016a). |

## CK-05 Lower Fraser River- Upper Pitt SU 1.3

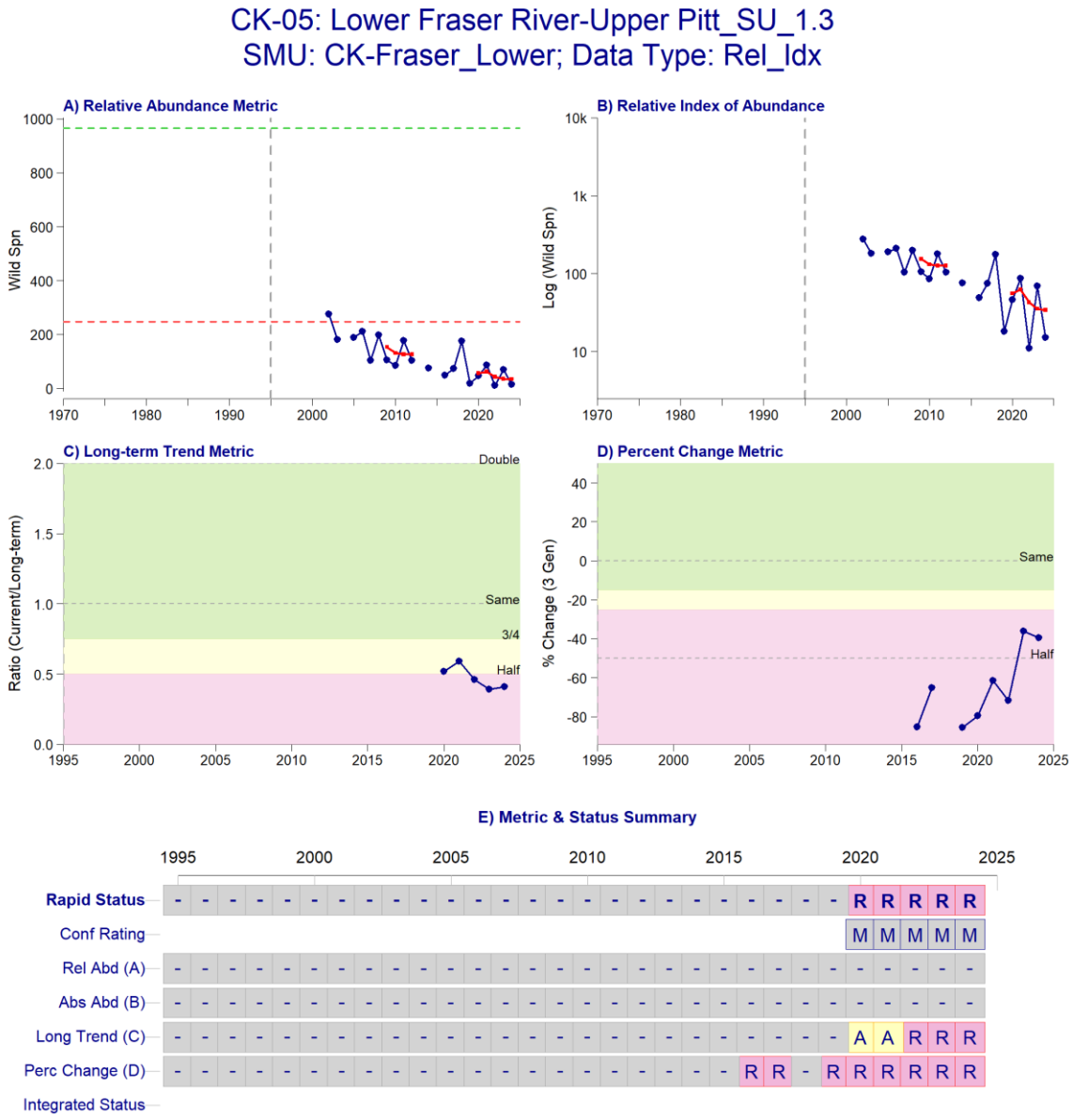


**Figure 1: Metrics and Status for Lower Fraser Upper-Pitt SU 1.3 (CK-05).** Panels on top show the four standard WSP metrics, calculated based on the available time series of spawner abundances. Bottom panel summarizes the status for each individual metric and shows the resulting WSP rapid status for the CU with a confidence rating. If integrated WSP status assessments have been completed for this CU, they are shown on the last row (IntStatus). Note that metric benchmarks may differ from algorithm thresholds, since thresholds approximate the status determination process from past WSP integrated status assessments (see Figure 2 and Table 4).

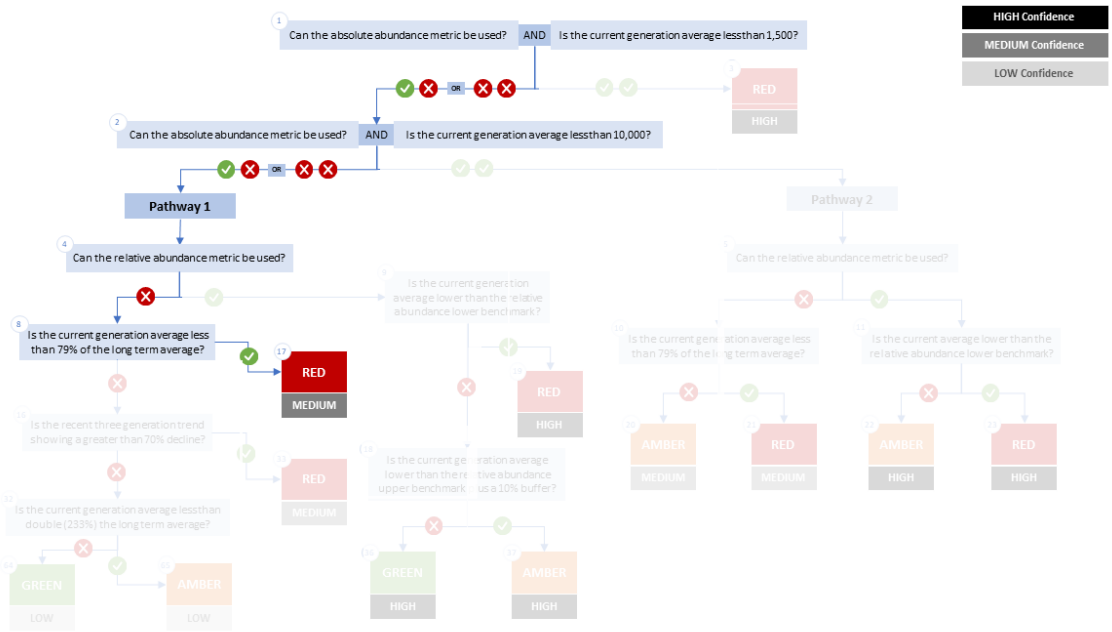


**Figure 2. Algorithm pathway taken to assess status for the Lower Fraser-Upper Pitt SU 1.3 in 2024.** Absolute abundance data is not available for this CU (follow to node 2 and 4). Not able to compare absolute abundance to relative abundance benchmark (follow to node 8). The long term trend can be calculated from the relative abundance index for this CU, and it is less than the 79% lower threshold used by the algorithm (follow node 17). Status for this CU is therefore designated as Red with Medium confidence at node 17 (see (DFO, 2024) for definition of each node).

**Table 4: Decision tree path given data and metric values for the Lower Fraser-Upper Pitt SU 1.3 in 2024; this aligns with Figure 2 above.** For each node, the algorithm decision is made by comparing the CUs current metric value to the metric threshold and answering Yes or No, running through sequential nodes and decisions until the final WSP rapid status for that CU and year is reached.

| Node | Metric | Metric Threshold | CUs Current Value | Decision |
|---|---|---|---|---|
| **1** | Relative Index | <1,500 | | NO, NO |
| **2** | Relative Index | < 10,000 | | NO, NO |
| **4** | Relative abundance | Available? | | NO |
| **8** | Long term trend | <79% of long term average | 33 | YES |
| **17** | FINAL STATUS NODE | | | RED, MEDIUM |

## CK-06 Lower Fraser River SU 1.3

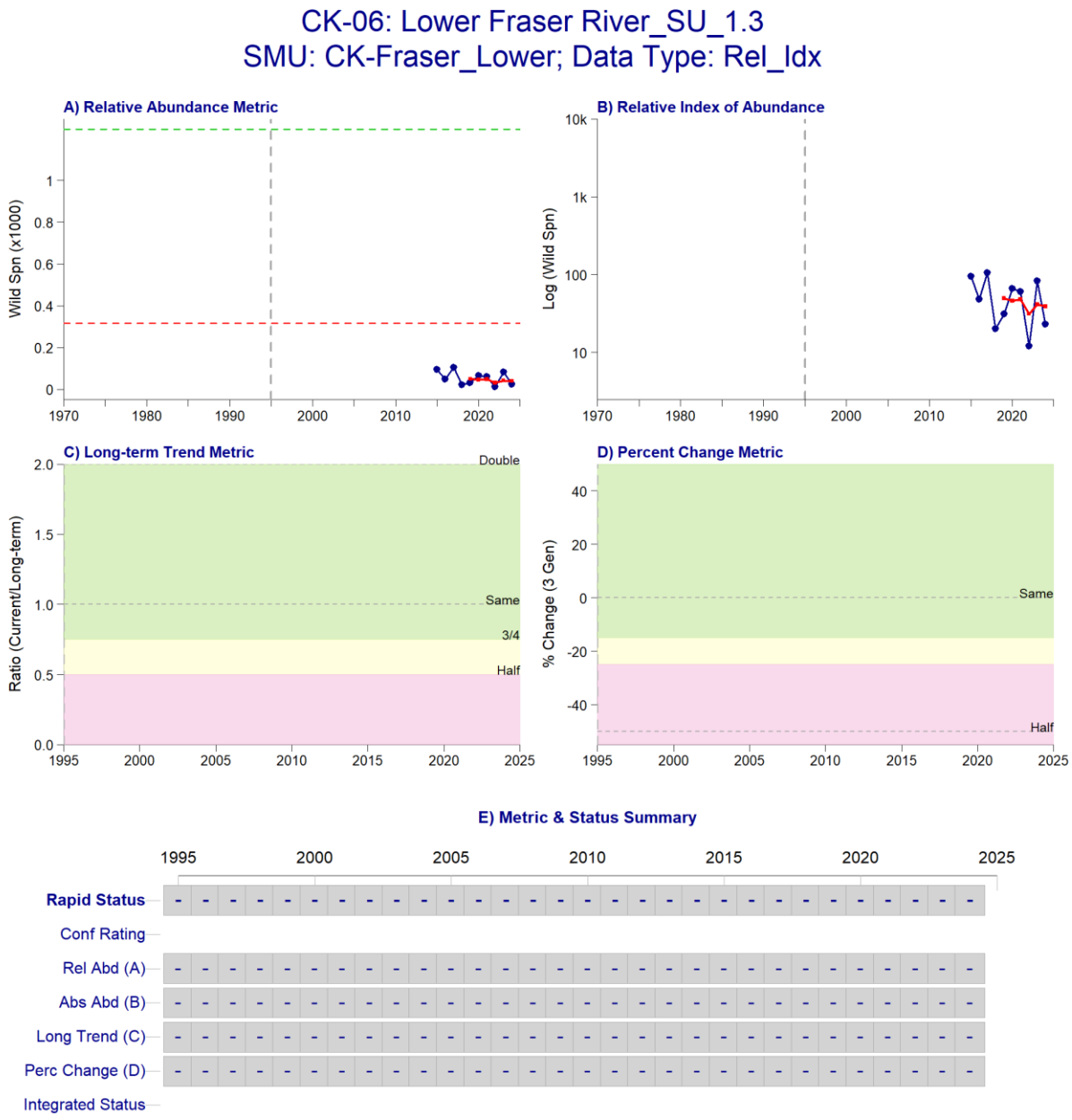


**Figure 3: Metrics and Status for Lower Fraser River SU 1.3 (CK-06).** Panels on top show the four standard WSP metrics, calculated based on the available time series of spawner abundances. Bottom panel summarizes the status for each individual metric and shows the resulting WSP rapid status for the CU with a confidence rating. If integrated WSP status assessments have been completed for this CU, they are shown on the last row (IntStatus). Note that metric benchmarks may differ from algorithm thresholds, since thresholds approximate the status determination process from past WSP integrated status assessments.

## CK-09 Middle Fraser River – Portage Fall 1.3

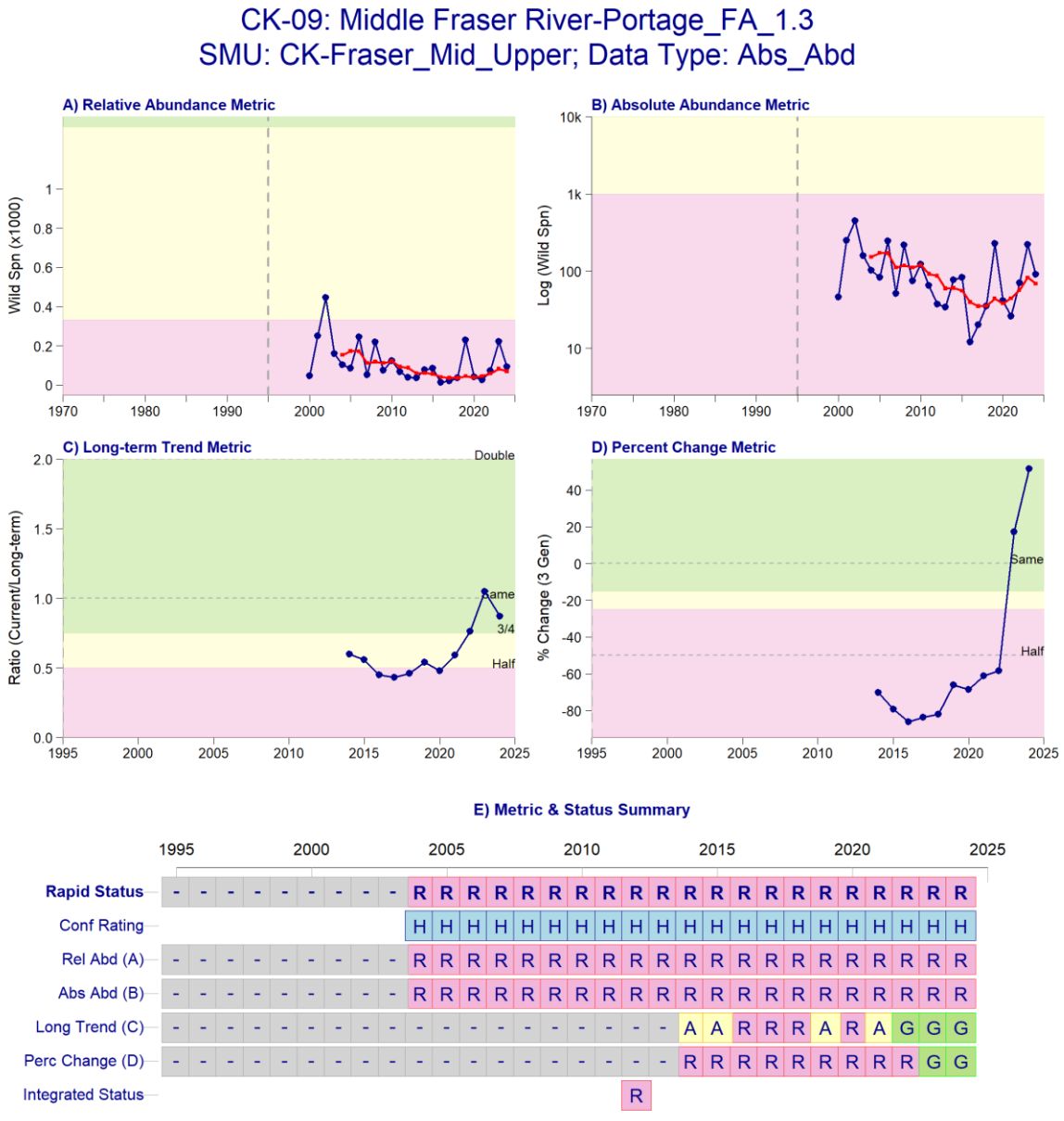


**Figure 4: Metrics and Status Middle Fraser River – Portage FA 1.3 (CK-09).** Panels on top show the four standard WSP metrics, calculated based on the available time series of spawner abundances. Bottom panel summarizes the status for each individual metric and shows the resulting WSP rapid status for the CU with a confidence rating. If integrated WSP status assessments have been completed for this CU, they are shown on the last row (IntStatus). Note that metric benchmarks may differ from algorithm thresholds, since thresholds approximate the status determination process from past WSP integrated status assessments.

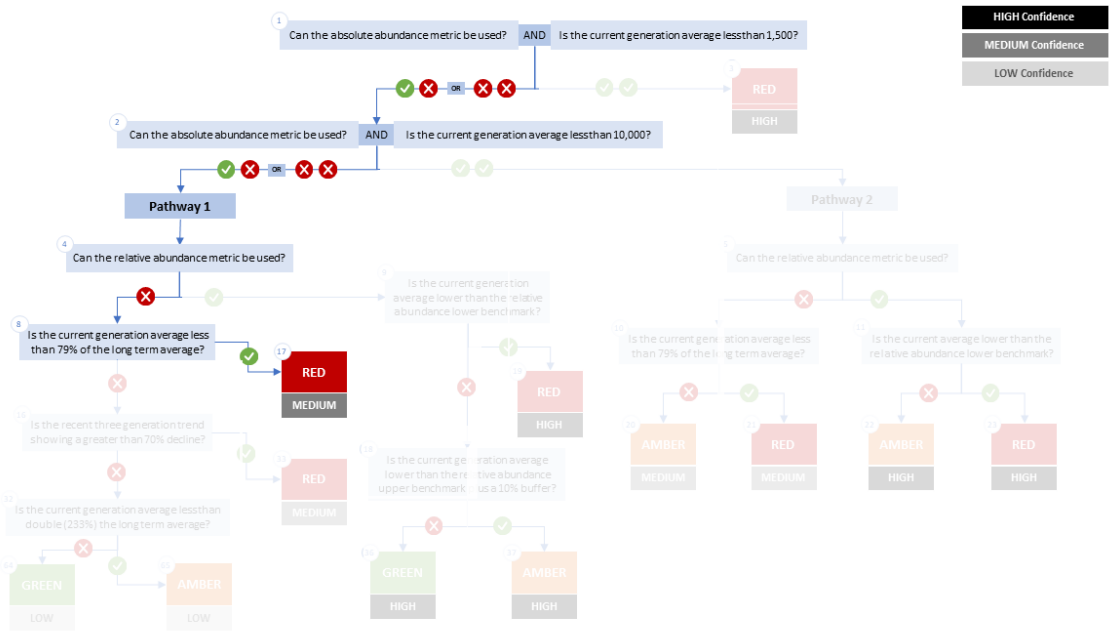


**Figure 5. Algorithm pathway taken to assess status for Middle Fraser River – Portage FA 1.3 in 2024.** Absolute abundance data is not available for this CU (follow to node 2 and 4). Not able to compare absolute abundance to relative abundance benchmark (follow to node 8). The long term trend can be calculated from the relative abundance index for this CU, and it is less than the 79% lower threshold used by the algorithm (follow node 17). Status for this CU is therefore designated as Red with Medium confidence at node 17 (see DFO 2024 for definition of each node)

**Table 5: Decision tree path given data and metric values for the Middle Fraser River – Portage FA 1.3 in 2024; this aligns with Figure 5 above.** For each node, the algorithm decision is made by comparing the CUs current metric value to the metric threshold and answering Yes or No, running through sequential nodes and decisions until the final WSP rapid status for that CU and year is reached.

| Node | Metric | Metric Threshold | CUs Current Value | Decision |
|---|---|---|---|---|
| **1** | Relative Index | <1,500 | | NO, NO |
| **2** | Relative index | < 10,000 | | NO, NO |
| **4** | Relative abundance | Available? | | NO |
| **8** | Long term trend | <79% of long term average | 68 | YES |
| **17** | FINAL STATUS NODE | | | RED, MEDIUM |

## CK-11 Middle Fraser River SU 1.3

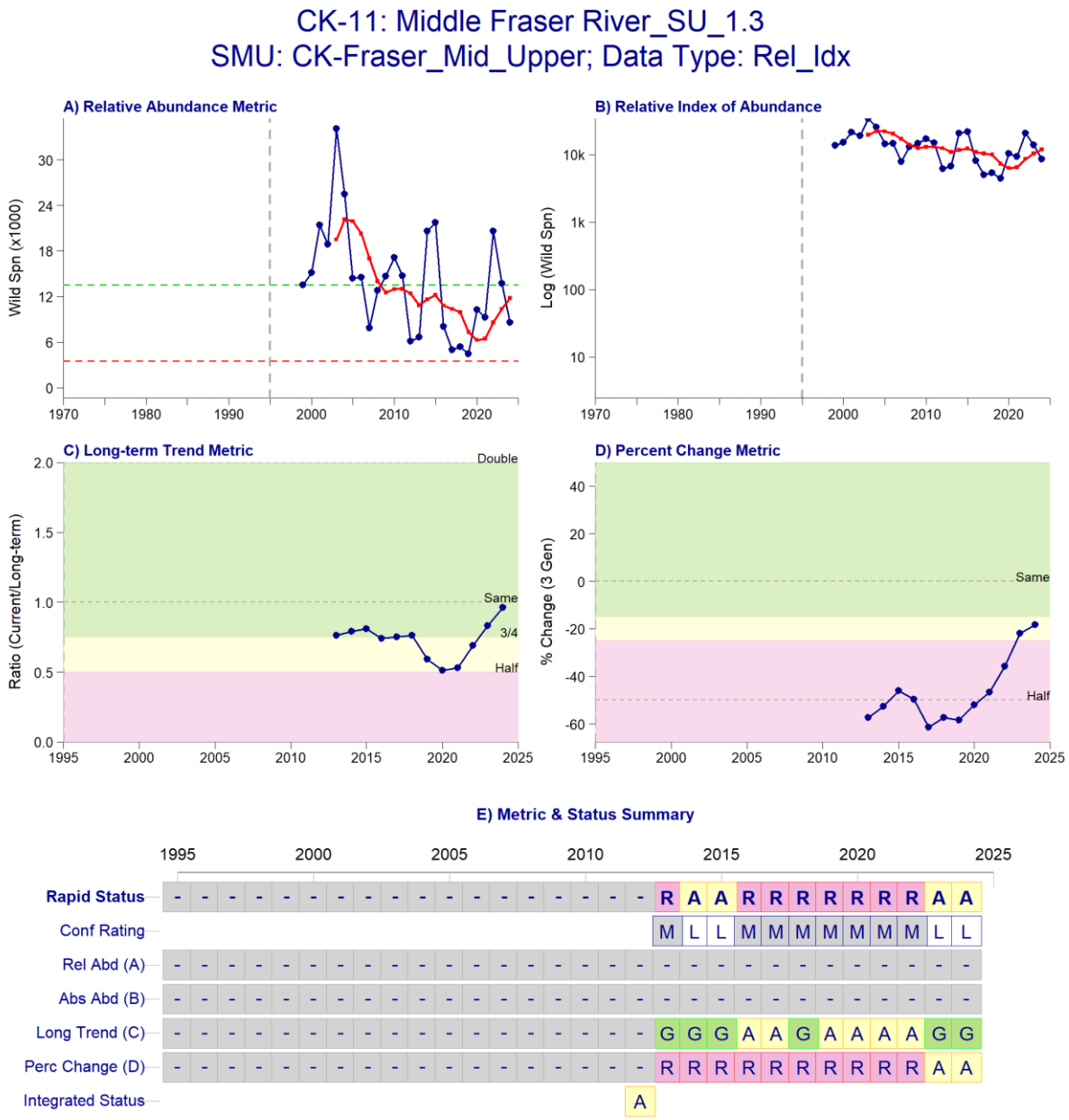


**Figure 6: Metrics and Status for Middle Fraser River SU 1.3 (CK-11).** Panels on top show the four standard WSP metrics, calculated based on the available time series of spawner abundances. Bottom panel summarizes the status for each individual metric and shows the resulting WSP rapid status for the CU with a confidence rating. If integrated WSP status assessments have been completed for this CU, they are shown on the last row (IntStatus). Note that metric benchmarks may differ from algorithm thresholds, since thresholds approximate the status determination process from past WSP integrated status assessments (see Figure 7 and Table 6).

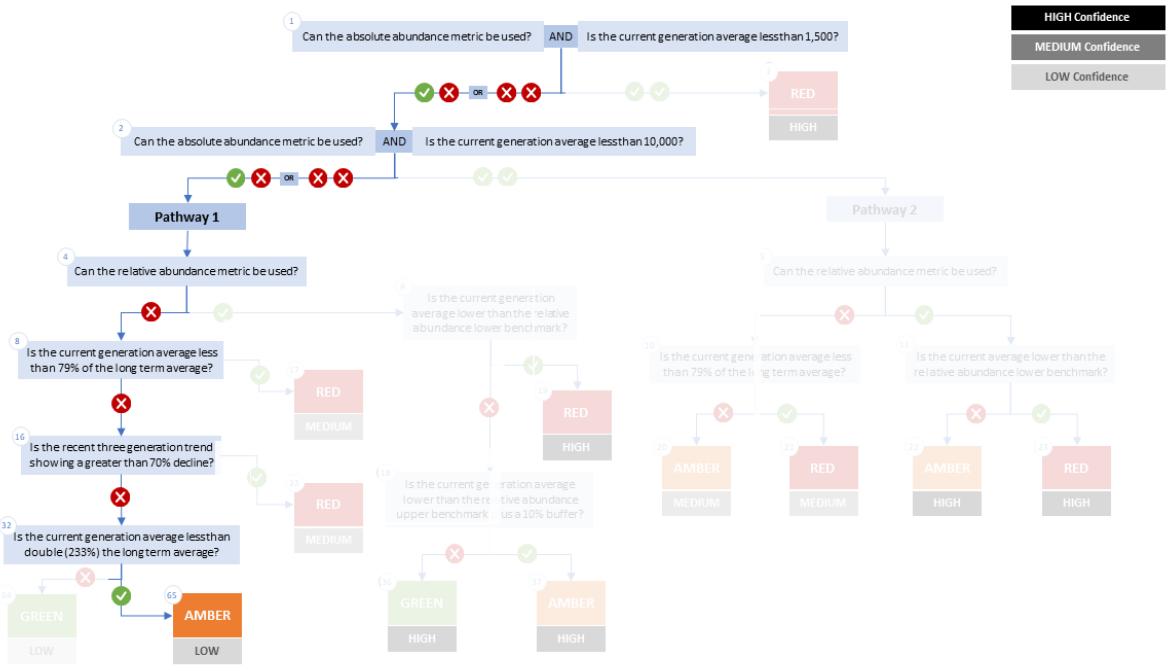


**Figure 7. Algorithm pathway taken to assess status for Middle Fraser River SU 1.3 in 2024** Absolute abundance data is not available for this CU (follow to node 2 and 4). Not able to compare absolute abundance to relative abundance benchmark (follow to node 8). The long-term trend can be calculated from the relative abundance index for this CU, and it is above the 79% lower threshold used by the algorithm (follow to node 16). The long-term trend is below the upper threshold used by the algorithm (follow to node 65). Status for this CU is therefore designated as Amber with Low confidence at node 65 (see DFO 2024 for definition of each node).

**Table 6: Decision tree path given data and metric values for Middle Fraser River SU 1.3 in 2024; this aligns with Figure 7 above.** For each node, the algorithm decision is made by comparing the CUs current metric value to the metric threshold and answering Yes or No, running through sequential nodes and decisions until the final WSP rapid status for that CU and year is reached.

| Node | Metric | Metric Threshold | CUs Current Value | Decision |
|---|---|---|---|---|
| **1** | Relative Index | <1,500 | | NO, NO |
| **2** | Relative Index | < 10,000 | | NO, NO |
| **4** | Relative Abundance | Available? | No | NO |
| **8** | Long Term Trend | <79% of long term average | 11,807 | NO |
| **16** | Percent Change | < 70% decline | 11,807 | NO |
| **32** | Long Term Trend | < 233% of long term average | 11,807 | YES |
| **65** | FINAL STATUS NODE | | | AMBER, LOW |

## CK-14 South Thompson SU 1.3

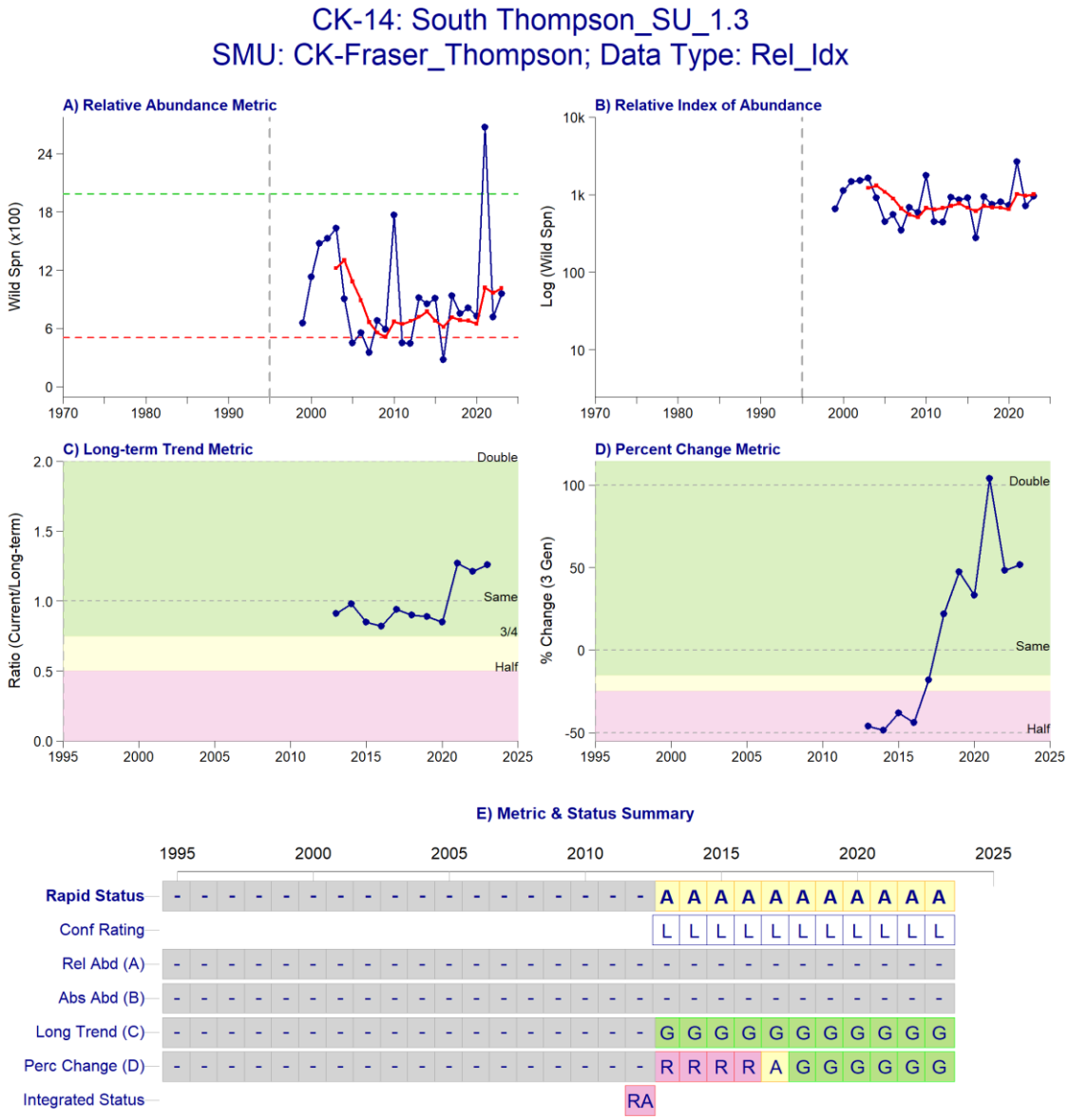


**Figure 8: Metrics and Status for South Thompson SU 1.3 (CK-14).** Panels on top show the four standard WSP metrics, calculated based on the available time series of spawner abundances. Bottom panel summarizes the status for each individual metric and shows the resulting WSP rapid status for the CU with a confidence rating. If integrated WSP status assessments have been completed for this CU, they are shown on the last row (IntStatus). Note that metric benchmarks may differ from algorithm thresholds, since thresholds approximate the status determination process from past WSP integrated status assessments (see Figure 9 and Table 7).

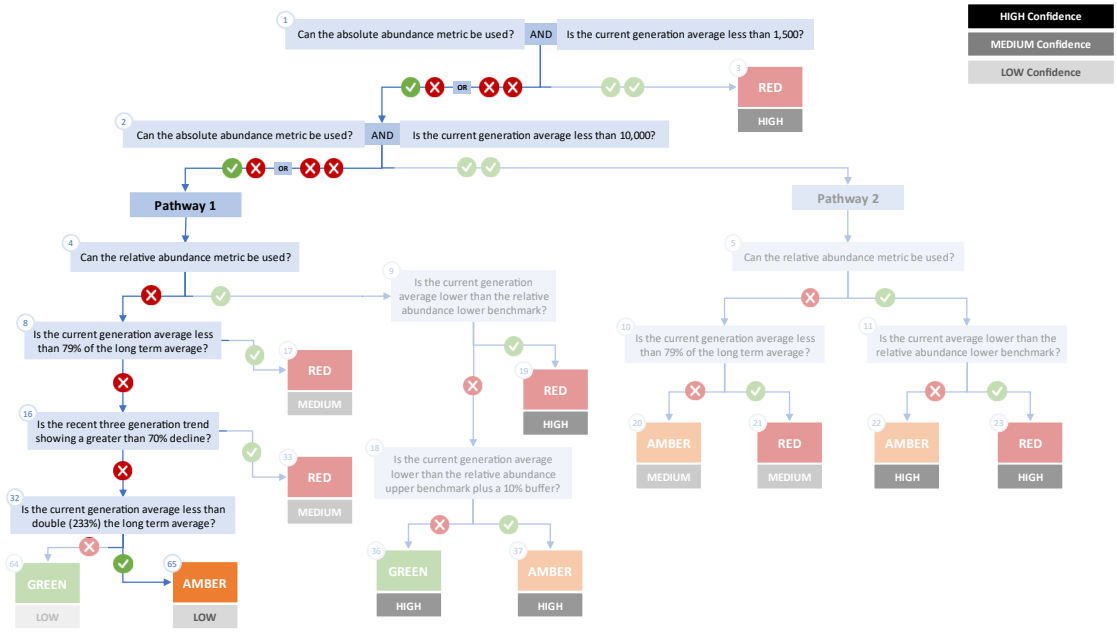


**Figure 9. Algorithm pathway taken to estimate status for South Thompson SU 1.3 (CK-14) in 2024**. Absolute abundance data is not available for this CU (follow to node 2 and 4). Not able to compare absolute abundance to relative abundance benchmark (follow to node 8). The long term trend can be calculated from the relative abundance index for this CU, and it is above the 79% lower threshold used by the algorithm (follow to node 16). The current percent change is above the -70% threshold (follow to node 32). The long term trend is below the upper threshold used by the algorithm (follow to node 65). Status for this CU is therefore designated as Green with low confidence at node 64 (see DFO 2024 for definition of each node). Status for this CU is therefore designated as Amber with low confidence at node 65 (see DFO 2024 for definition of each node).

**Table 7: Decision tree path given data and metric values for South Thompson 1.3 (CK-14) in 2024; this aligns with Figure 9 above.** For each node, the algorithm decision is made by comparing the CUs current metric value to the metric threshold and answering Yes or No, running through sequential nodes and decisions until the final WSP rapid status for that CU and year is reached.

| Node | Metric | Metric Threshold | CUs Current Value | Decision |
|---|---|---|---|---|
| **1** | Relative Index | <1,500 | | NO, NO |
| **2** | Relative Index | < 10,000 | | NO, NO |
| **4** | Relative Abundance | Available? | | NO |
| **8** | Long Term Trend | <79% of long term average | 945 | NO |
| **16** | Percent Change | < 70% decline | 945 | NO |
| **32** | Long Term Trend | < 233% | 945 | YES |
| **65** | FINAL STATUS NODE | | | AMBER, LOW |

## CK-19 North Thompson SU 1.3

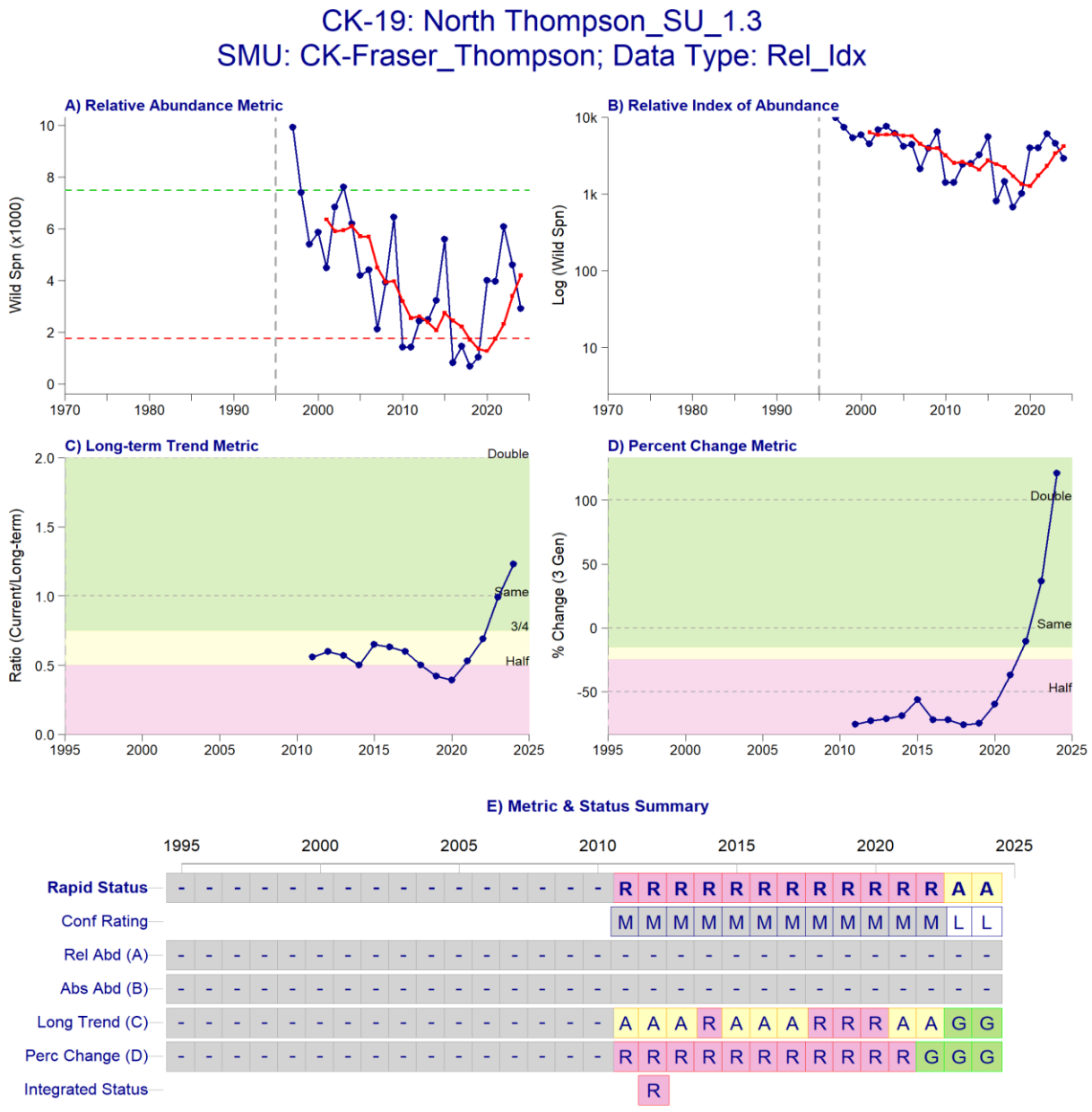


**Figure 10: Metrics and Status for North Thompson SU 1.3 (CK-19).** Panels on top show the four standard WSP metrics, calculated based on the available time series of spawner abundances. Bottom panel summarizes the status for each individual metric and shows the resulting WSP rapid status for the CU with a confidence rating. If integrated WSP status assessments have been completed for this CU, they are shown on the last row (IntStatus). Note that metric benchmarks may differ from algorithm thresholds, since thresholds approximate the status determination process from past WSP integrated status assessments (see Figure 11 and Table 8).

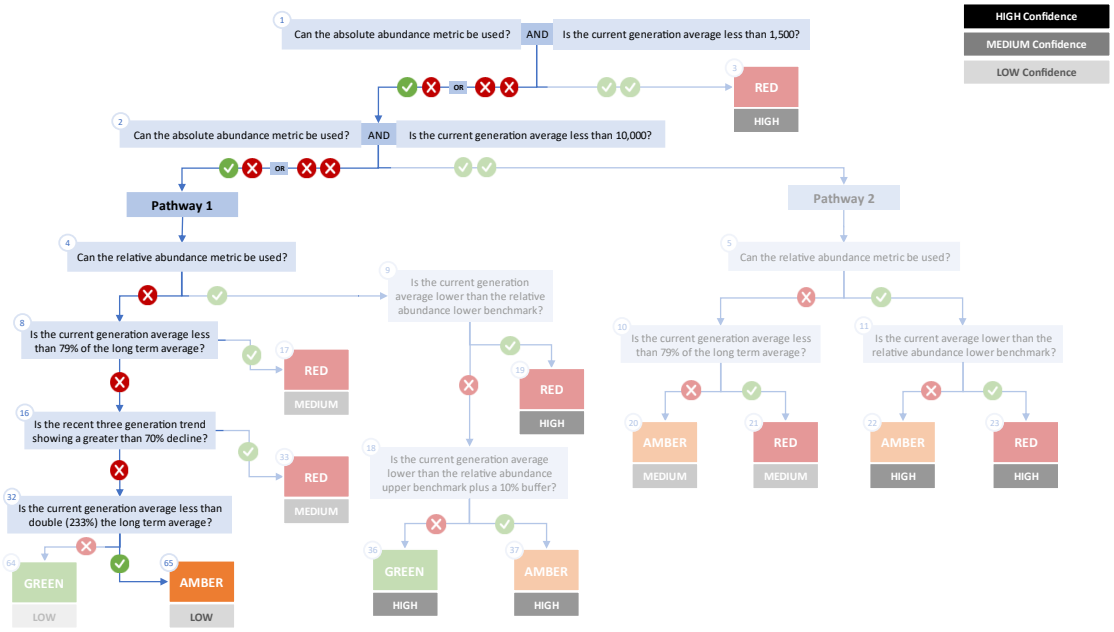


**Figure 11. Algorithm pathway taken to estimate status for North Thompson SU 1.3 (CK-19) in 2024**. Absolute abundance data is not available for this CU (follow to node 2 and 4). Not able to compare absolute abundance to relative abundance benchmark (follow to node 8). The long term trend can be calculated from the relative abundance index for this CU, and it is above the 79% lower threshold used by the algorithm (follow to node 16). The current percent change is above the -70% threshold (follow to node 32). The long term trend is below the upper threshold used by the algorithm (follow to node 65). Status for this CU is therefore designated as Green with low confidence at node 64 (see DFO 2024 for definition of each node). Status for this CU is therefore designated as Amber with low confidence at node 65 (see DFO 2024 for definition of each node).

**Table 8: Decision tree path given data and metric values for North Thompson SU 1.3 (CK-19) in 2024; this aligns with Figure 11 above.** For each node, the algorithm decision is made by comparing the CUs current metric value to the metric threshold and answering Yes or No, running through sequential nodes and decisions until the final WSP rapid status for that CU and year is reached.

| Node | Metric | Metric Threshold | CUs Current Value | Decision |
|---|---|---|---|---|
| **1** | Relative Index | <1,500 | | NO, NO |
| **2** | Relative Index | < 10,000 | | NO, NO |
| **4** | Relative Abundance | Available? | | NO |
| **8** | Long Term Trend | <79% of long term average | 4,188 | NO |
| **16** | Percent Change | < 70% decline | 4,188 | NO |
| **32** | Long Term Trend | < 233% of long term average | 4,188 | YES |
| **65** | FINAL STATUS NODE | | | AMBER, LOW |

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Pestal, G., Macdonald, B. L., Grant, S. C. H., & Holt, C. A. (2023). State of The Salmon: Rapid status assessment approach for Pacific salmon under Canada's Wild Salmon Policy. *Can. Tech. Rep. Fish. Aquat. Sci.*, *3570*, 1–200.

# Appendix A: Summary of Hatchery Releases

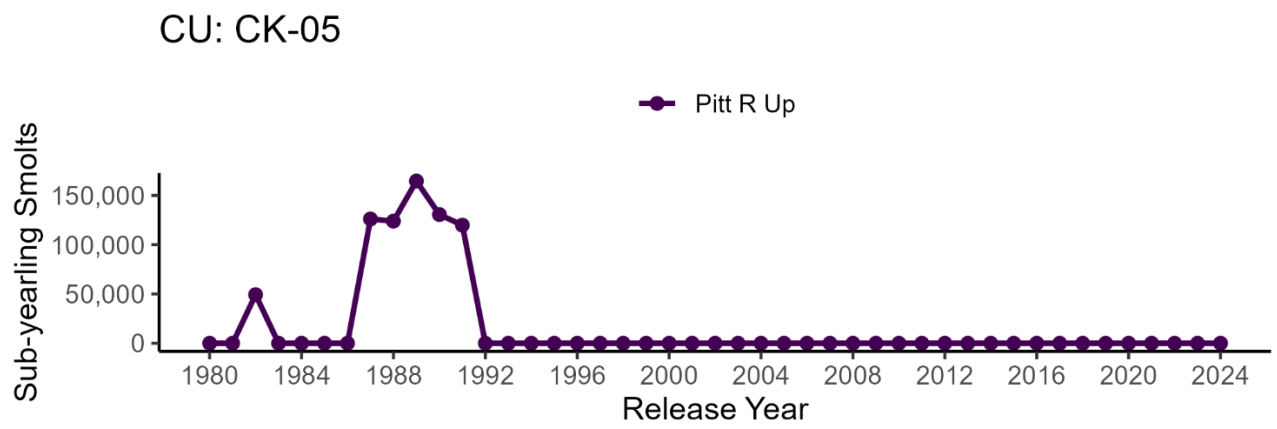


**Figure A.1.** Lower Fraser River – Upper Pitt Summer 1.3 (CK-05) hatchery releases by life stage from 1980-2024.

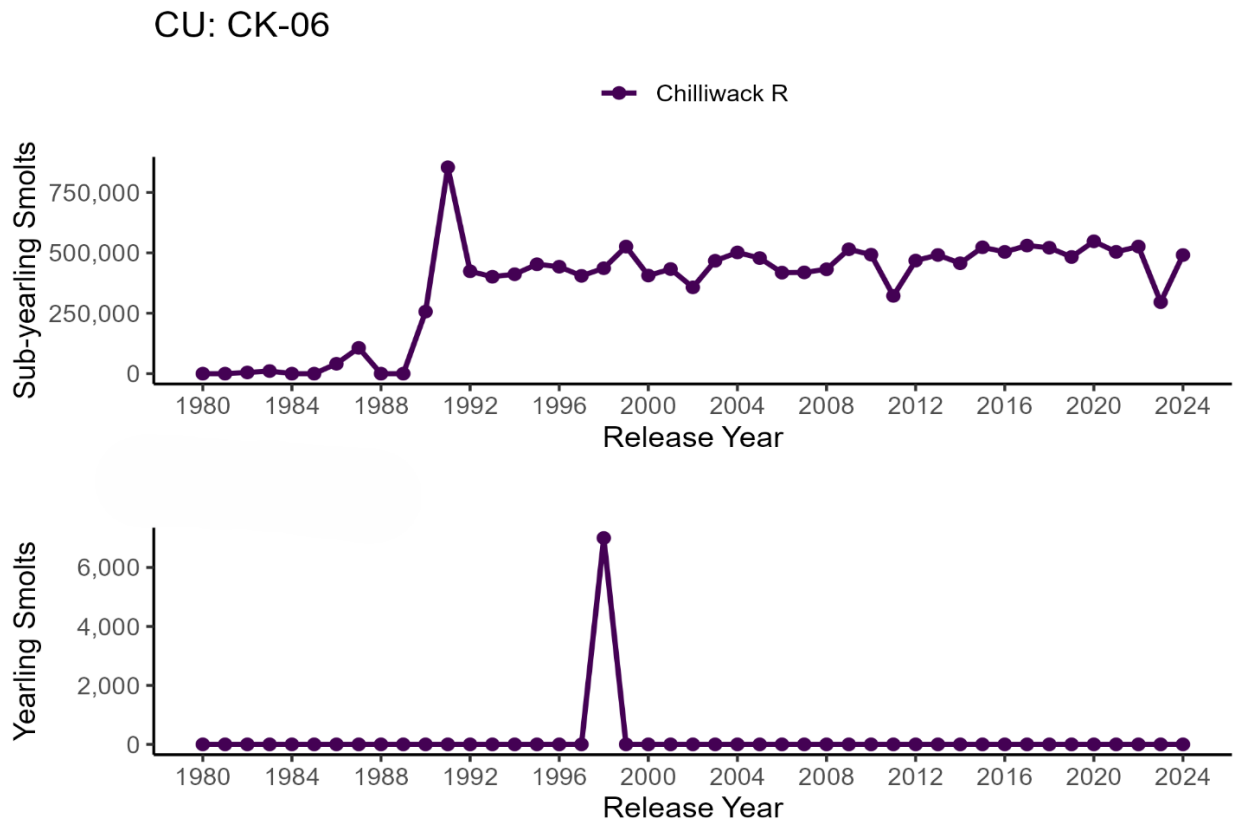


**Figure A.2.** Lower Fraser River Summer 1.3 (CK-06) hatchery releases by life stage from 1980-2024.

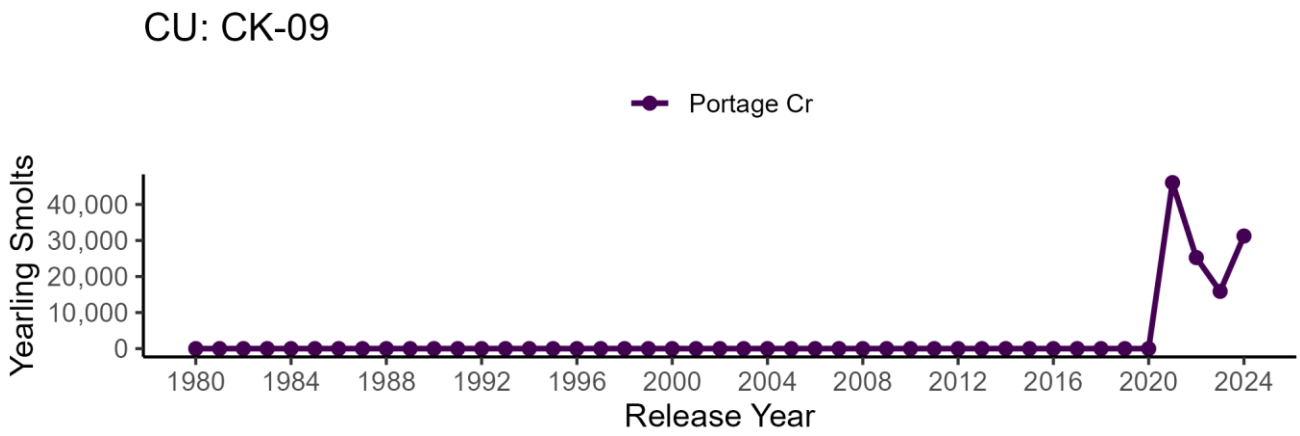


**Figure A.3.** Middle Fraser River-Portage Fall 1.3 (CK-09) hatchery releases by life stage from 2024.

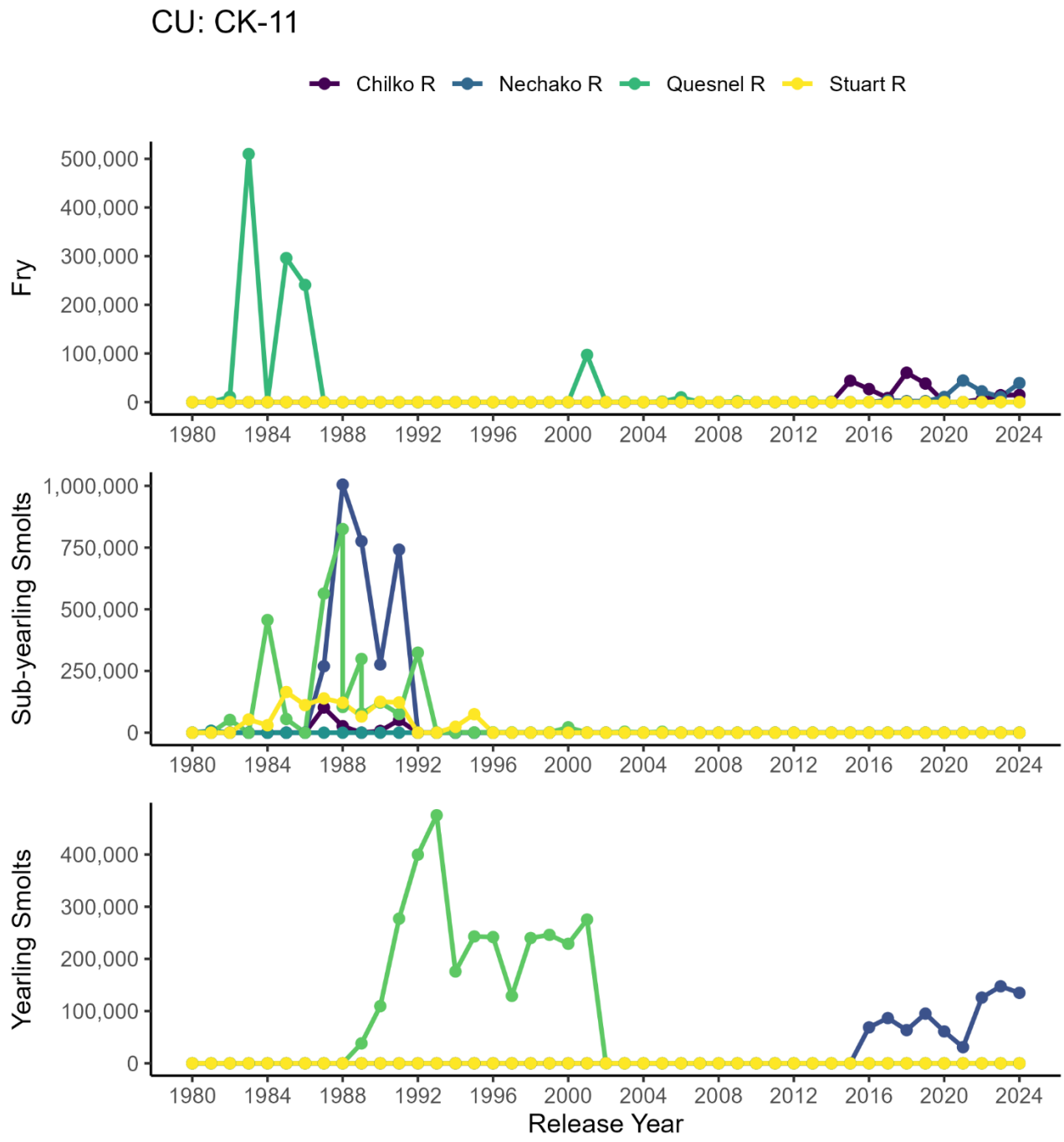


**Figure A.4.** Middle Fraser River Summer 1.3 (CK-11) hatchery releases by life stage from 1980-2024.

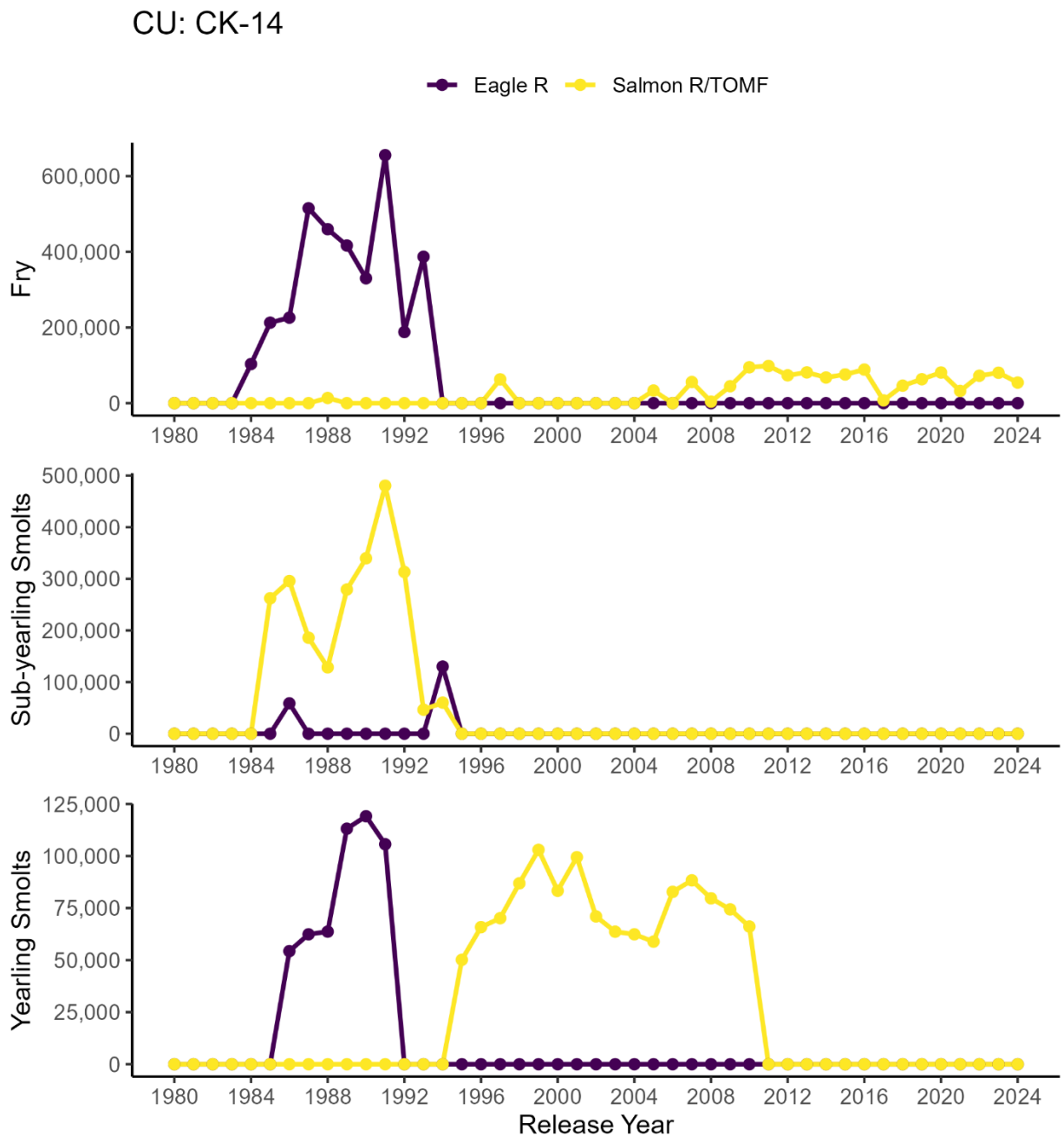


**Figure A.5.** South Thompson Summer 1.3 (CK-14) hatchery releases by life stage from 1980-2024.

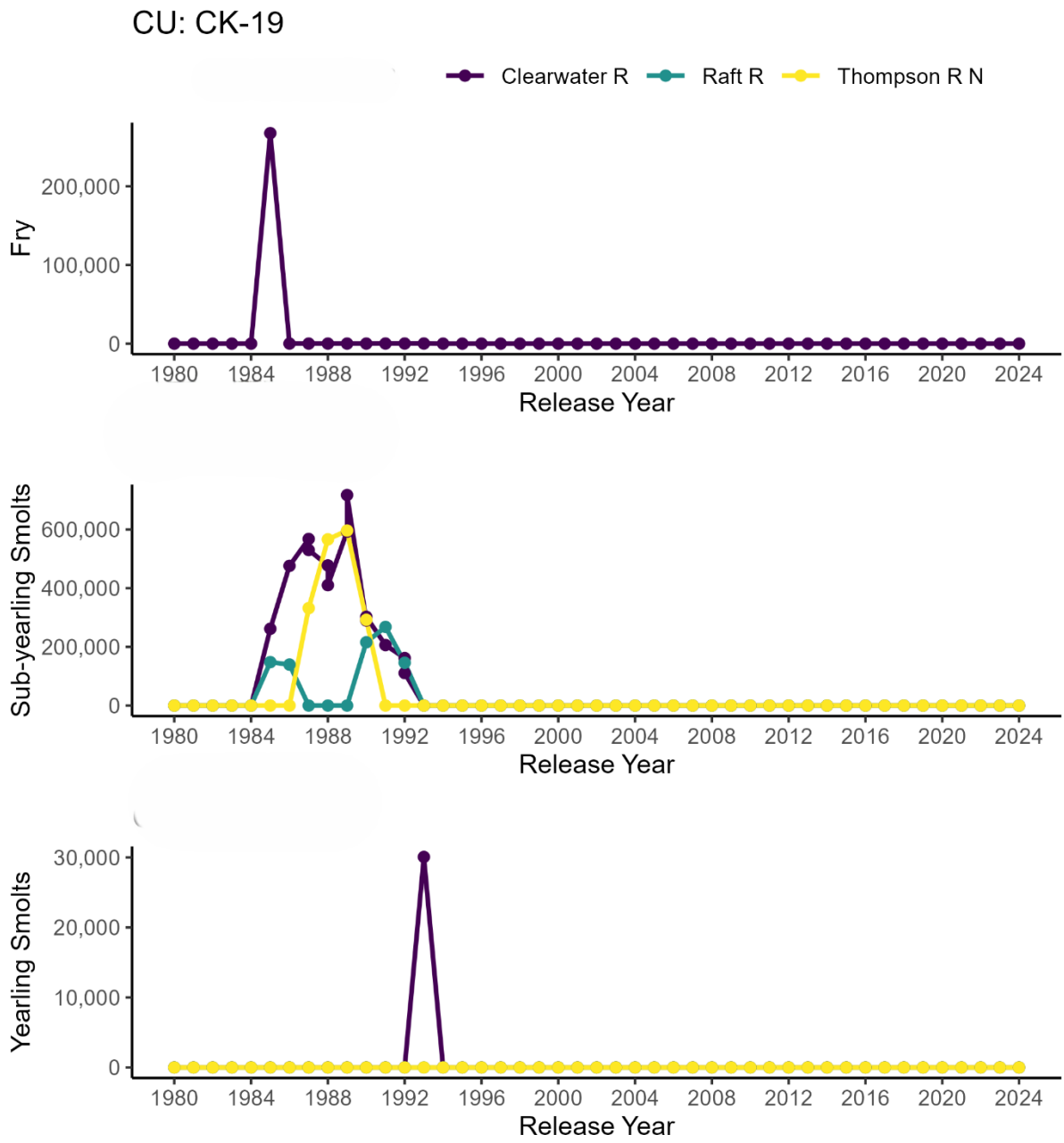


**Figure A.6.** North Thompson Summer 1.3 (CK-19) hatchery releases by life stage from 1980-2024.

# Appendix B: WSP rapid status approach details

**The decision tree sequence is as follows (see Figure B1; Table B1, B2):**

1. The first question is whether or not a CU has a current absolute abundance value, and if so, whether or not this value falls below the lower threshold of 1,500 (which adds a buffer to Committee on the Status of Endangered Wildlife in Canada (COSEWIC) Criterion D1 for small population size of 1,000). If the answer to this question is Yes, then the CU is assigned Red (node 3), with *High confidence*.
2. If the answer to the first question is No, then the second question is whether or not the CU has a current absolute abundance value, and if so, whether or not the current abundance is below the upper threshold of 10,000, which is COSEWIC's Criterion C upper benchmark. This second question splits the decision nodes into two Pathways: Pathway 1 (No to this question) and Pathway 2 (Yes to this question).
    - **Pathway 1:** is where a CU either does not have a current absolute abundance value, or has these data, and it falls above the upper threshold for this metric. This pathway is split with the question: can this CU be assessed with a relative abundance metric. If the answer is Yes, a Red (nodes 19), Amber (nodes 37) or Green (node 36) WSP rapid status is assigned, with High confidence, depending on where the current abundance value falls relative to this metric's lower and upper thresholds. If the answer is NO, then comparisons are made between the CUs current abundances and percent change to thresholds for these metrics, which assign a Red with Medium confidence, or Green or Amber with Low confidence status.
    - **Pathway 2:** is where a CU has absolute abundance data, and these abundances fall between the lower and upper thresholds. In this pathway, absolute abundances restrict WSP rapid statuses to only Amber or Red. This pathway is split with the question: can this CU be assessed with a relative abundance metric. If the answer is Yes, an Amber (node 22) with Medium confidence, or Red (node 23) with High confidence, is assigned, depending on whether the CUs current abundance value falls above the relative abundance metric lower threshold or below. If the CU cannot be assessed with a relative abundance metric, then it is compared to the lower threshold of the Long-Term trend metric and assigned Amber (node 20) with Medium confidence if above, or Red (node 21) with Medium confidence if below.

**Table B1. Biological status zones under the Wild Salmon Policy (WSP).**

| Status | | Definition |
|---|---|---|
| | ***Red*** | Poor status CU facing an imminent threat of extinction [revised definition, given alignment with COSEWIC *Endangered* statuses] |

| | | |
|---|---|---|
| | ***Amber*** | "While a CU in the *Amber* zone should be at low risk of loss, there will be a degree of lost production. Still, this situation may result when CUs share risk factors with other, more productive units". Aligns with COSEWIC *Threatened and Special Concern* statuses. |
| | ***Green*** | "identif[ies] whether harvest are greater than the level expected to provide on an average annual basis, the maximum annual catch for a CU, given existing conditions…there would not be a high probability of losing the CU". Aligns with COSEWIC *Not at Risk* statuses. |
| | ***DD*** | **Data deficient**. CUs have been designated as DD if there is no data available, or if the available data is insufficient for calculating status metrics (after quality control). |

**Table B2. WSP rapid status *Learning Tree 3* status assignments by node (see Figure B.1).** This table presents the decisions in *Learning Tree 3* that led to *Red* or *Amber* or *Green* status assignments; status outcomes depend on the pathway and decisions made. The final node that corresponds to the status assignment is presented below (see Figure 1).

| Node | Status | Rule |
|---|---|---|
| Node3 | *Red* | Data Type is Absolute Abundance AND *Absolute Abundance* < 1,500 |
| Node17 | *Red* | Data Type is Relative Index OR *Absolute Abundance* ≥ 1,500;<br>then Data Type is Relative Index OR *Absolute Abundance* ≥ 10,000;<br>then no *Relative Abundance* lower benchmark; then *Long Term Trend* < 79% |
| Node19 | *Red* | Data Type is Relative Index OR *Absolute Abundance* ≥ 1,500;<br>then Data Type is Relative Index OR *Absolute Abundance* ≥ 10,000<br>then have *Relative Abundance* lower benchmark*;*<br>then *Relative Abundance < Relative Abundance* lower benchmark |
| Node20 | *Amber* | Data Type is Relative Index OR *Absolute Abundance* ≥ 1,500;<br>then Data Type is Absolute Abundance AND *Absolute Abundance<10,000;*<br>then no *Relative Abundance* lower benchmark; then *Long Term Trend* ≥ 79% |
| Node21 | *Red* | Data Type is Relative Index OR *Absolute Abundance* ≥ 1,500;<br>then Data Type is Absolute Abundance AND *Absolute Abundance<10,000;*<br>then no *Relative Abundance* lower benchmark; then *Long Term Trend* < 79% |
| Node22 | *Amber* | Data Type is Relative Index OR *Absolute Abundance* ≥ 1,500;<br>then Data Type is Absolute Abundance AND *Absolute Abundance<10,000;*<br>then have *Relative Abundance lower benchmark;*<br>then *Relative Abundance ≥ Relative Abundance* lower benchmark |
| Node23 | *Red* | Data Type is Relative Index OR *Absolute Abundance* ≥ 1,500;<br>then Data Type is Absolute Abundance AND *Absolute Abundance<10,000;*<br>then have *Relative Abundance lower benchmark;*<br>then *Relative Abundance < Relative Abundance* lower benchmark |
| Node33 | *Red* | Data Type is Relative Index OR *Absolute Abundance* ≥ 1,500;<br>then Data Type is Relative Index OR *Absolute Abundance* ≥ 10,000;<br>then no *Relative Abundance* lower benchmark;<br>then *Long Term Trend* ≥ 79%; then Percent Change < -70 |

| | | |
|---|---|---|
| Node36 | *Green* | Data Type is Relative Index OR Absolute Abundance ≥ 1,500;<br>then Data Type is Relative Index OR Absolute Abundance ≥ 10,000<br>then have Relative Abundance lower benchmark;<br>then Relative Abundance ≥ Relative Abundance lower benchmark;<br>then Relative Abundance ≥ Relative Abundance upper benchmark x 1.1 |
| Node37 | *Amber* | Data Type is Relative Index OR Absolute Abundance ≥ 1,500;<br>then Data Type is Relative Index OR Absolute Abundance ≥ 10,000<br>then have Relative Abundance lower benchmark;<br>then Relative Abundance ≥ Relative Abundance lower benchmark;<br>then Relative Abundance < Relative Abundance upper benchmark x 1.1 |
| Node64 | *Green* | Data Type is Relative Index OR *Absolute Abundance* ≥ 1,500;<br>then Data Type is Relative Index OR *Absolute Abundance* ≥ 10,000;<br>then no *Relative Abundance* lower benchmark;<br>then *Long Term Trend* ≥ 79%; then Percent Change < -70<br>then *Long Term Trend* ≥ 233 |
| Node65 | *Amber* | Data Type is Relative Index OR *Absolute Abundance* ≥ 1,500;<br>then Data Type is Relative Index OR *Absolute Abundance* ≥ 10,000;<br>then no *Relative Abundance* lower benchmark;<br>then *Long Term Trend* ≥ 79%;<br>then Percent Change < -70<br>then *Long Term Trend* < 233 |

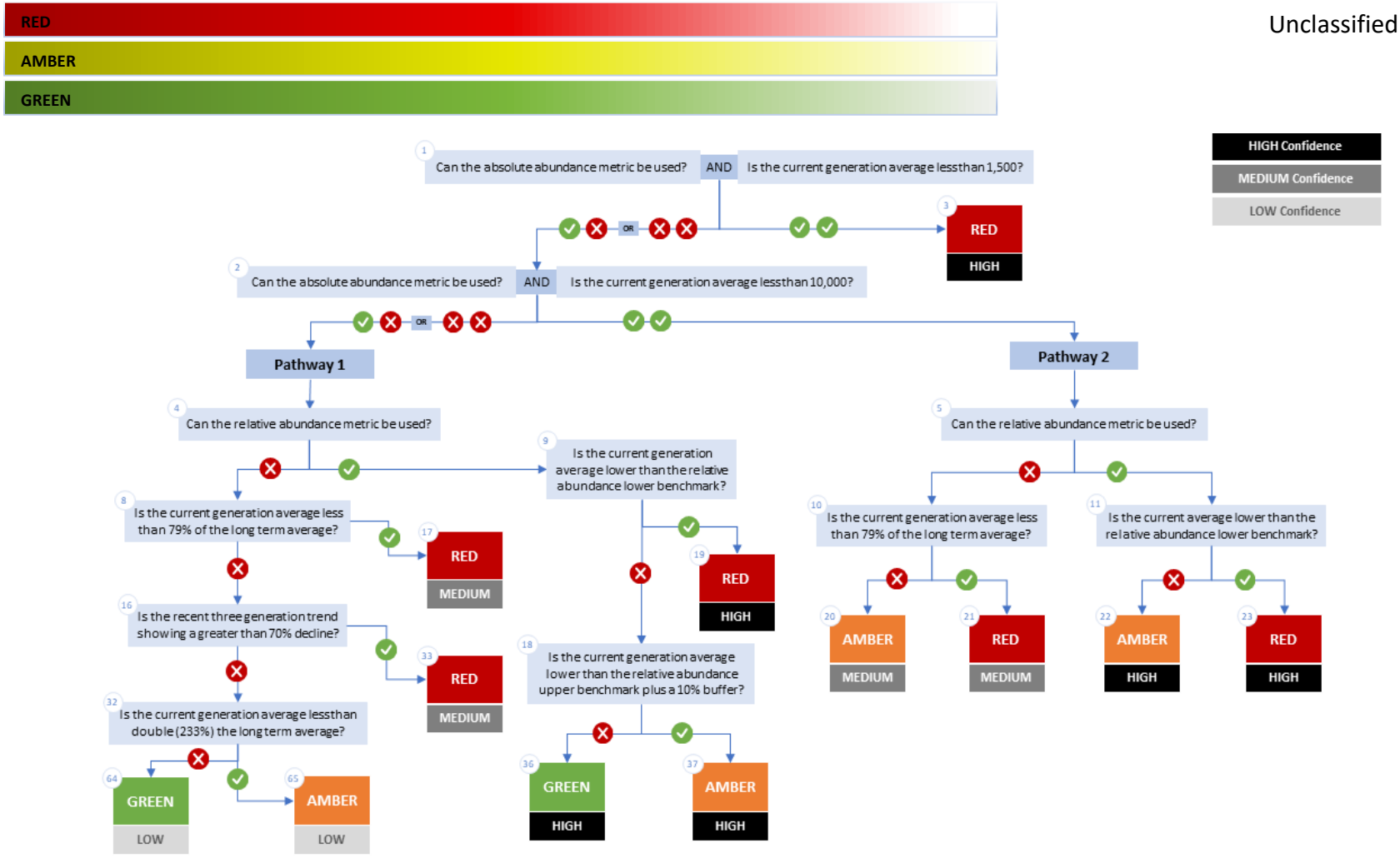


**Figure B.1.** WSP rapid status decision tree (Table 2 includes written descriptions). To assess a CU, metric values are compared to thresholds presented at each decision point. Yes or No answers split each path of the decision tree, terminating at WSP rapid status assignments. The different splits are identified as nodes: 1 to 65. **Pathway 1** is taken when the CU has no absolute abundance data, or these data exist, but fall above its upper threshold of 10,000. **Pathway 2** is taken when the CU has absolute abundance data and these fall under its upper benchmark of 10,000.

## Appendix C: Meeting History and Participants

Tables and summaries of meetings and participants, specifically participants who identified as a subject matter expert for one or more CUs.

**Table C1.** Participants for the expert review of Fraser Interior Area Chinook held January 31, 2025, 1:00-4:30pm PST.

| Attendee | Affiliation |
|---|---|
| Chuck Parken | DFO |
| Colin Bailey | DFO |
| Morgan Dunne | DFO |
| Nicole Trouton | DFO |
| Amber Messmer | DFO |
| Sue Grant | DFO |
| Bronwyn MacDonald | DFO |
| Simon-Luc Noel | DFO |
| Isabella Borea | DFO |
| Marissa Glavas | DFO |
| Elinor McGrath | Okanagan Nation Alliance |
| Peter Nicklin | Tŝilhqot'in National Government |
| Kelsey Campbell | A'Tlegay Fisheries |
| Michelle Walsh | Shuswap Nation |

**Table C2.** Participants for the expert review of Spring and Summer 1.3 Fraser Interior Area Chinook held August 25th , 2025 1:00-4:00pm PST.

| Attendee | Affiliation |
|---|---|
| Shamus Curtis | Upper Fraser Fisheries Alliance |
| Michelle Walsh | Shuswap Nation |
| Chuck Parken | DFO |
| Colin Bailey | DFO |
| Isabella Borea | DFO |
| Nicole Trouton | DFO |
| Tommy Pontbriand | DFO |
| Simon-Luc Noel | DFO |
| Sue Grant | DFO |