LIMIT REFERENCE POINTS AND WILD SALMON POLICY RAPID STATUS SUMMARY: FRASER PINK STOCK MANAGEMENT UNIT

Data

There is one CU within the Fraser Pink Odd SMU: Fraser Pink (PKO-1) (Table 1). The data sets used in this assessment are documented in (Grant et al. 2014) and were updated through 2023 with data form the Pacific Salmon Commission. It was determined that these data cannot be used for the absolute abundance metric, though can be applied to the relative abundance metric. Fraser Pinks return in odd years, so status assessments are conducted for odd years only. Pink even year returns are negligible, and therefore, there is no corresponding Fraser Pink CU for these years.

Table 1. Conservation Units included in this Stock Management Unit and lists of the most abundant populations within each Conservation Unit.

CU No#	CU name	Populations
PKO-1	**Fraser Pink Odd Return Years**	Escapement methods conducted in odd years changed over the time series (Grant et al. 2014): 1961-1991: stream-specific methods (Lower Fraser; Fraser Canyon; Upper Fraser; Seton-Anderson; Thompson; Harrison; Vedder-Chilliwack) 1993-2001: system-wide mark recaptures 2003-2007: indirect system-wide test-fishery estimates 2009-2023: system-wide hydroacoustic estimates

Relative Abundance Benchmarks: Relative abundance lower (S_{gen}: recovery to spawners at maximum sustainable yield (S_{MSY})) and upper (80% S_{MSY}) benchmarks for the Fraser Pink Odd return year SMU/CU are presented in Table 2.

Table 2. Relative abundance-based benchmarks and probability levels for the Fraser Pink SMU/CU (80% S_{MSY} = upper benchmark; S_{gen} = lower benchmark). The median (50% Interval) are the values used in the WSP rapid status algorithm.

				Credible Intervals (values in millions of fish)						
CU	Benchmark	Mean	SD	5%	10%	25%	**50%**	75%	90%	95%
Fraser Pink	S_{gen}	2.0	0.9	1.0	1.1	1.4	**1.8**	2.4	3.2	3.8
	80% S_{MSY}	4.7	1.3	3.5	3.7	4.1	**4.7**	5.4	6.5	7.6

Rapid Status Summary

Below is the LRP and WSP Rapid Status summary for the Fraser Pink SMU. The WSP Rapid Status summary includes the status for 2023, and a narrative that was produced through a technical review with DFO subject matter experts, and pending a review with First Nation groups.

Distribution of spawners within a CU: The stream level distribution of spawners within CUs, and any notable changes, are important to Indigenous groups. This perspective will be captured in the CU status narratives (Table 3), pending a review with First Nation groups.

Future work: [pending an expert review]

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

There is one CUs in the Fraser Pink SMU and it is designed **Green**, placing this SMU **above the LRP** in terms of WSP rapid status (Figures 1 & Tables 3 - 5). Expert review has not yet been completed for Fraser Pinks with local First Nations to reach consensus[1] on the CU WSP status and the SMU LRP status. This will be completed at a future date.

Table 3. WSP rapid statuses for 2023: The WSP rapid status algorithm was used to assess annual statuses for the Fraser Pink CU (details provided in DFO 2024; Pestal et al. 2023).

CU #	**CU Name**	**WSP Rapid Status (2022)**	**WSP rapid status node**
	Fraser Pinks	**GREEN, HIGH CONFIDENCE**	The recent year's status (2023) is designated *Green* with *High* confidence. The recent generational average cannot be compared to the *absolute abundance* algorithm, and falls above 1.1* the *relative-abundance* metric upper benchmark (80% S_{msy}) (node 36) (Figures 1-3; Table 4). This status has been *Green* from 1995 to 2023, with the exception of a few years, which were Amber (1997, 1999 & 2017). After a period of high production in the mid-1990s, Fraser Pinks escapements declined, which resulted in a *Red* percent change (three generation trend) metric for several years. In recent years, however, escapement has increased and the percent change metric is currently *Green*. No WSP integrated status has been completed for this CU previously. Escapement methods have changed over the time series, with no inter-calibration between years (Grant et al. 2014) (Table 1). Since 1993, escapements are not available for individual Fraser tributaries. Therefore, the underlying distribution of spawners cannot be determined. Spawner distribution may be particularly important for the Fraser Pink CU, given their broad distribution in the Fraser watershed. Fraser Pink salmon have recently been observed in several

[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.

			tributaries of the upper Fraser River where they haven't been consistently observed for many years. The broad distribution throughout the Fraser River likely increases the uncertainty of the relative-abundance benchmarks as there is potential stock structure that is currently unaccounted for.

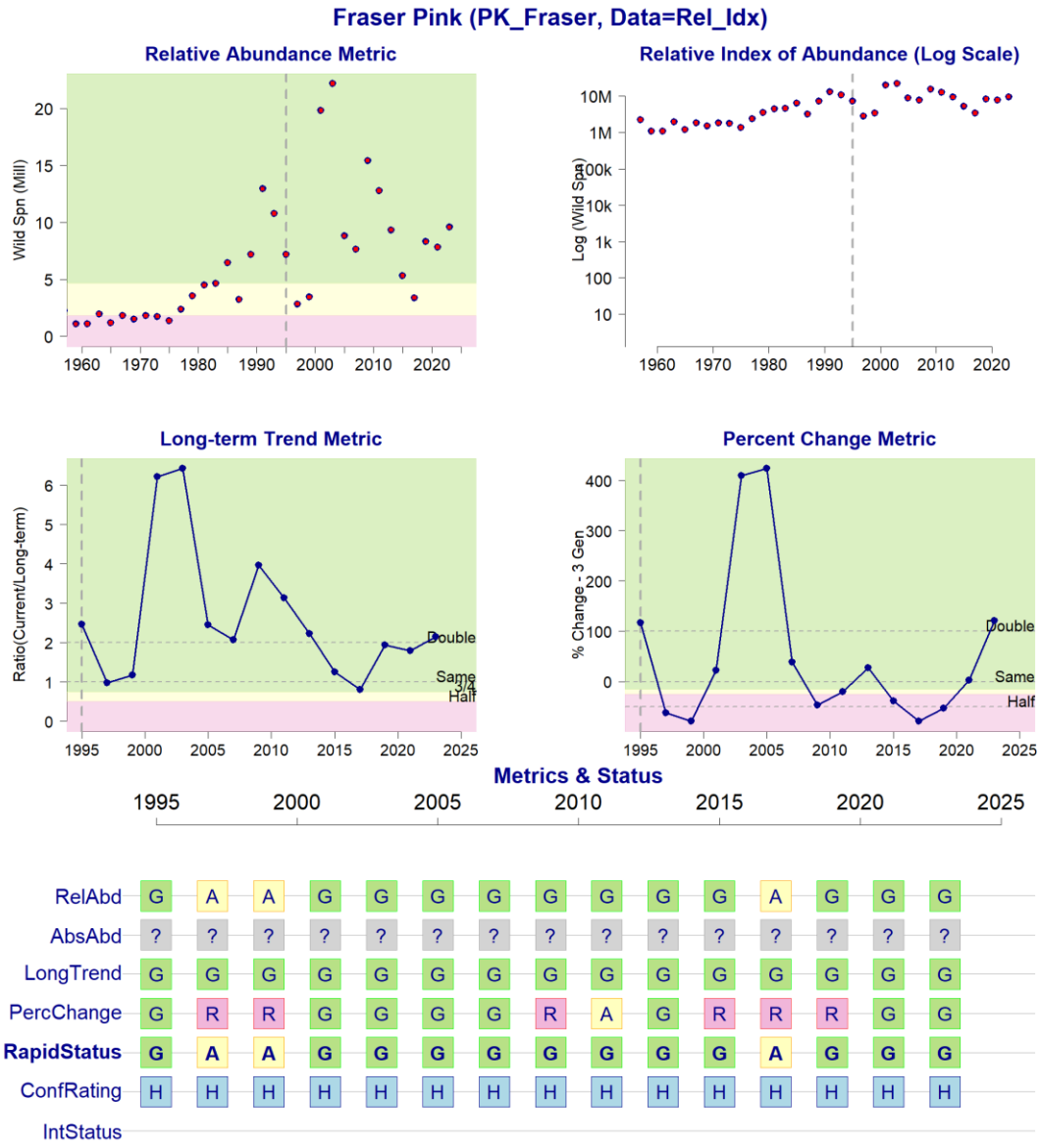

Figure 1: Metrics and Status for Fraser Pink (PKO-1). The four top panels show the four standard WSP metrics, calculated based on the available time series of spawner abundances. Where appropriate and available, benchmarks are provided, and figures are coloured red, amber or green to correspond to values that fall in the corresponding *Red, Amber* or *Green* status zones for each metric. The bottom panel summarizes the status for each individual metric

from 1995 to 2023, and shows the resulting rapid status for the CU with a confidence rating. No past WSP integrated status assessments have been conducted.

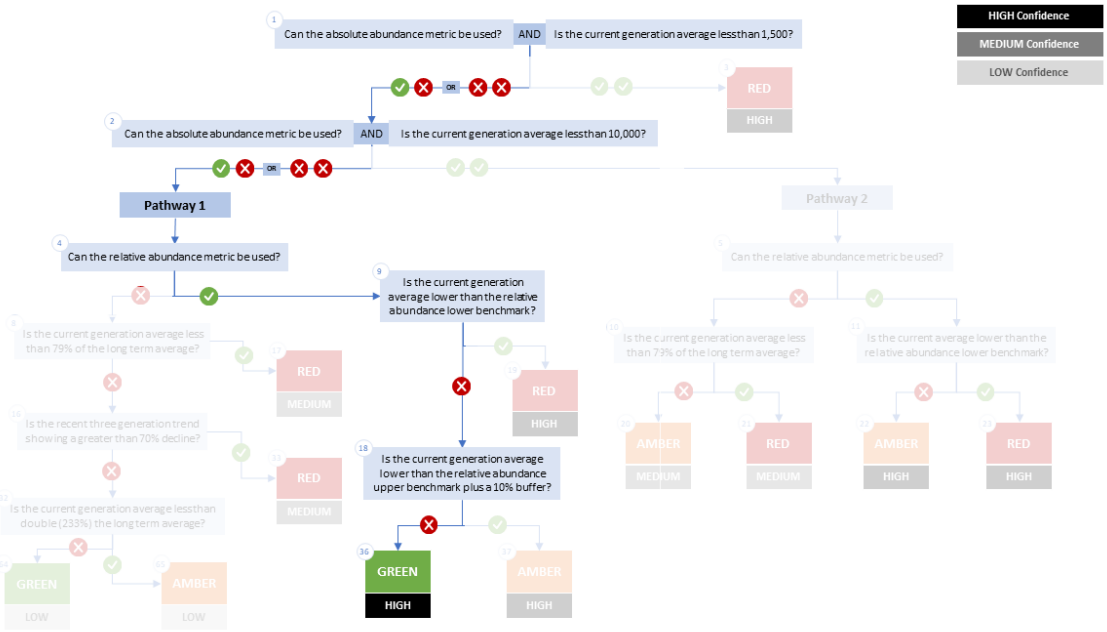

Figure 2. Algorithm pathway taken to assess status for Fraser Pink in 2023. The absolute abundance metric cannot be used for Fraser Pinks, since escapements are considered indices of abundances. The relative abundance metric can be used (node 4). The current generation escapement (2023) does not fall below either the lower (Sgen) or upper (80% Smsy) thresholds for this metric. Status for this CU is therefore designated as *Green* with *High* confidence at Node 36.

Table 4. Decision tree path given data and metric values for Fraser Pink in 2023; this aligns with Figure 3 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	Decision	CUs Current value	Decision for WSP rapid status
1	absolute abundance	cannot use absolute abundance metric	NA	NO

2	absolute abundance	cannot use absolute abundance metric	NA	NO
4	relative abundance	YES	NA	YES
9	relative abundance	less than Sgen (1.8 M)	9.6 M	NO
18	relative abundance	less than 80% Smsy + 10% (4.7 M)	9.6 M	NO
36	FINAL STATUS NODE			GREEN

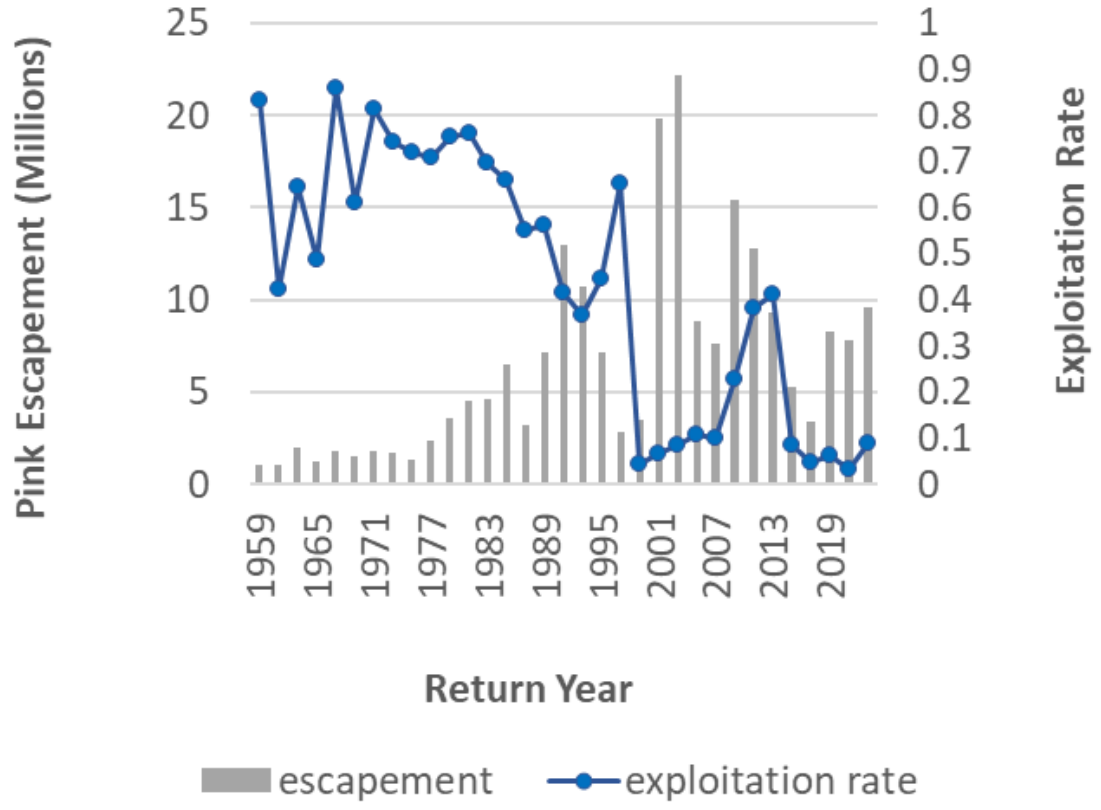

Figure 3. Escapement and exploitation rates for Fraser Pink (odd years). This includes years 1959 to 2023.

Key References for Fraser Pinks

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