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Agenda Item D.3.b
Supplemental NMFS Presentation 1
March 2022

SRKW Chinook Low Abundance Threshold update

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Purpose

Inform the Council and the public on information that would update the Chinook low abundance threshold numerical value.



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Amendment 21

In 2020 the Council adopted and NMFS approved Amendment 21 that sets a threshold for annual Chinook salmon abundance, in U.S. waters north of Cape Falcon, Oregon, below which the Council and NMFS would take additional fishery management actions through the adoption of annual ocean salmon management measures.

- The threshold is responsive to NMFS concerns for SRKW including: consecutive years of low abundance and a mix of SRKW status.
- Specifically the threshold used the years 1994 – 1996, 1998 – 2000 and 2007) which have a mix of SRKW status (e.g. fecundity, survival, population growth), with two relatively good status years (1994 and 2007) and the remaining low abundance years had fair or poor SRKW status
- These years account for various scenarios of low abundance trends of Chinook salmon that the SRKW may experience into the future, taking into account the biological needs of SRKW (e.g., consistent access to prey across their range, duration of their pregnancy, needs of nursing mothers/offspring in back-to-back years, etc.)



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Updating the Threshold

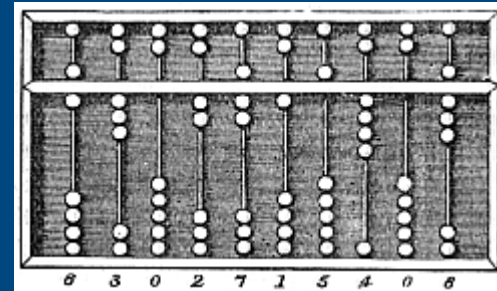
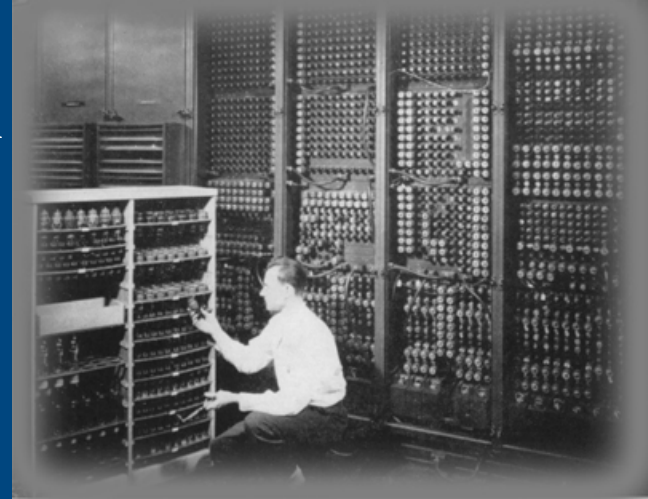
- The Ad-Hoc Workgroup advised that the threshold's numerical value would likely be updated as new data became available and models were updated (Amendment 21 added language to the FMP allowing for this process as explained in Section 6.6.8)

(specifically, 1994 – 1996, 1998 –2000 and 2007) of October 1 projections of Chinook salmon abundance in the NOF area prior to fisheries occurring in the EEZ (referred to as time step 1 (TS1)) during the reference time period of 1992-2016. Based on the best scientific information available in 2021, the threshold is 966,000 Chinook. If a technical review of the best scientific information available provides evidence that, in the view of the STT, SSC, and the Council, a modification of the estimated value of the TS1 starting abundance estimates for the seven lowest years is necessary to be consistent with the best available scientific information, the Council may adopt an updated value for the threshold, which will be reported in the preseason process. The annual projected TS1 Chinook abundance will be reported by the STT in the preseason process to determine if projected abundance is below the threshold.



Updating the Threshold

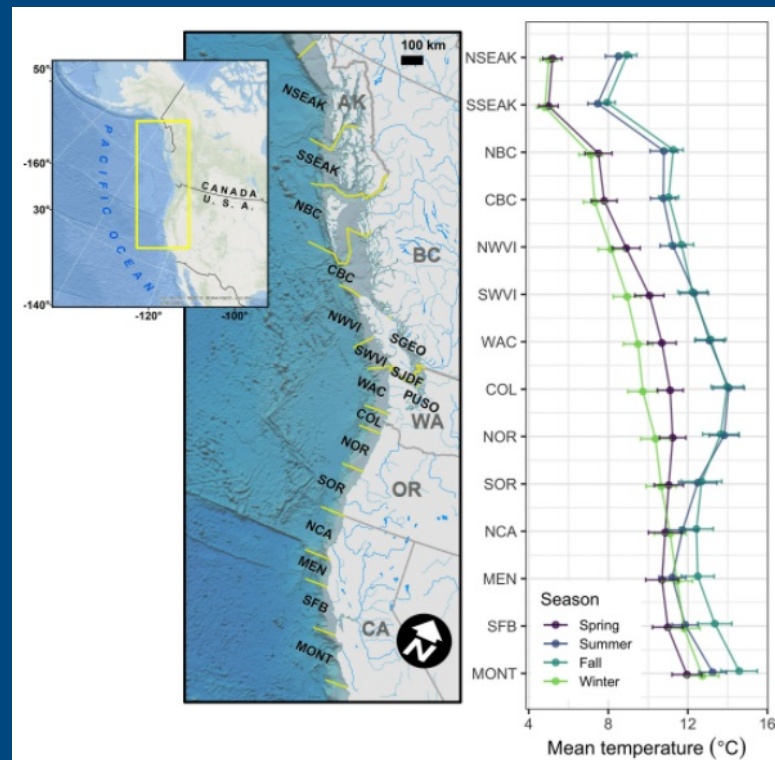
- As previously mentioned the threshold was constructed using Fishery Regulation Assessment Model (FRAM (version 6.2)) and the Shelton et al. model distribution for Chinook salmon (version 2019)
 - As a FRAM is used in annual ocean salmon season-setting process
 - Post-season use, e.g., to estimate impacts for ESA-listed stocks
- **Version 6.2 was used in original threshold calculation, while version 7.1.1 is now available**



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Updating the Threshold

- As previously mentioned the threshold was constructed using Fishery Regulation Assessment Model (FRAM (version 6.2)) and the Shelton et al. model distribution for Chinook salmon (version 2019)
- As a reminder the Shelton et al. model distributes individual fall-run stocks Chinook salmon in the ocean spatially and temporally
- **As of 2022, updates to the Shelton et al. distributions are available for use**



From Figure 1, Shelton et. al 2021

Updating the Threshold

- Shelton et al. 2021 updated stock distributions better reflect the expected abundance in NOF area, matching other sources of data (e.g., far north migrating stocks like Columbia River Bright stocks are less likely to be present, and since these north migrating stocks are abundant, it results in lower abundances across the dataset in the NOF area)
- Less abundance is expected in the NOF TS 1 area, both currently and historically. It does not change the considerations for establishing the threshold

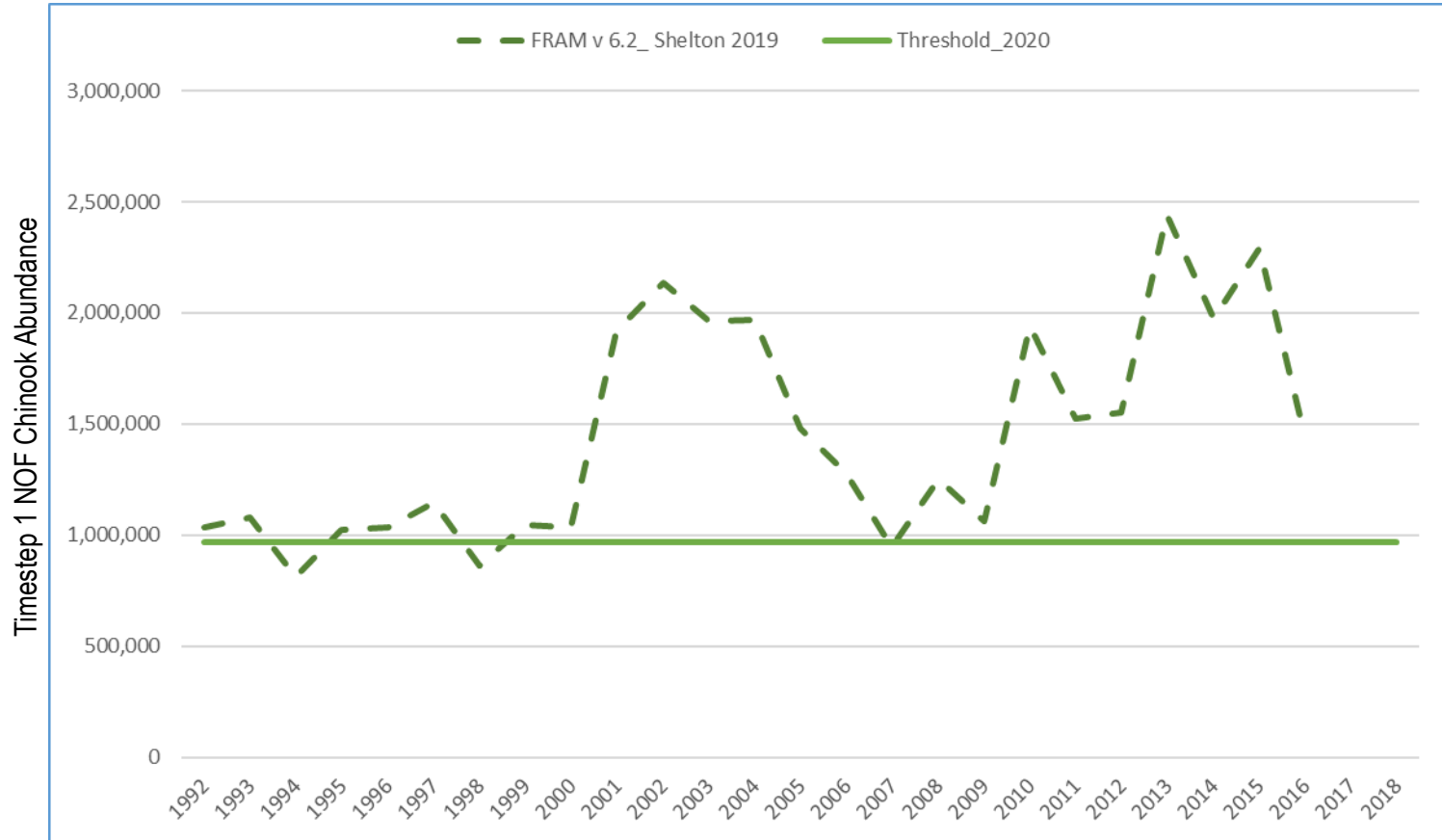
- Reasons include:

Shelton et al. 2019	Shelton et al. 2021
454 CWT groups	1,400 CWT groups
2,100 CWT codes	8,279 CWT codes
1979-1995 recovery years	1979-2015 recovery years

- Updates do not alter the pattern of abundance highs and lows

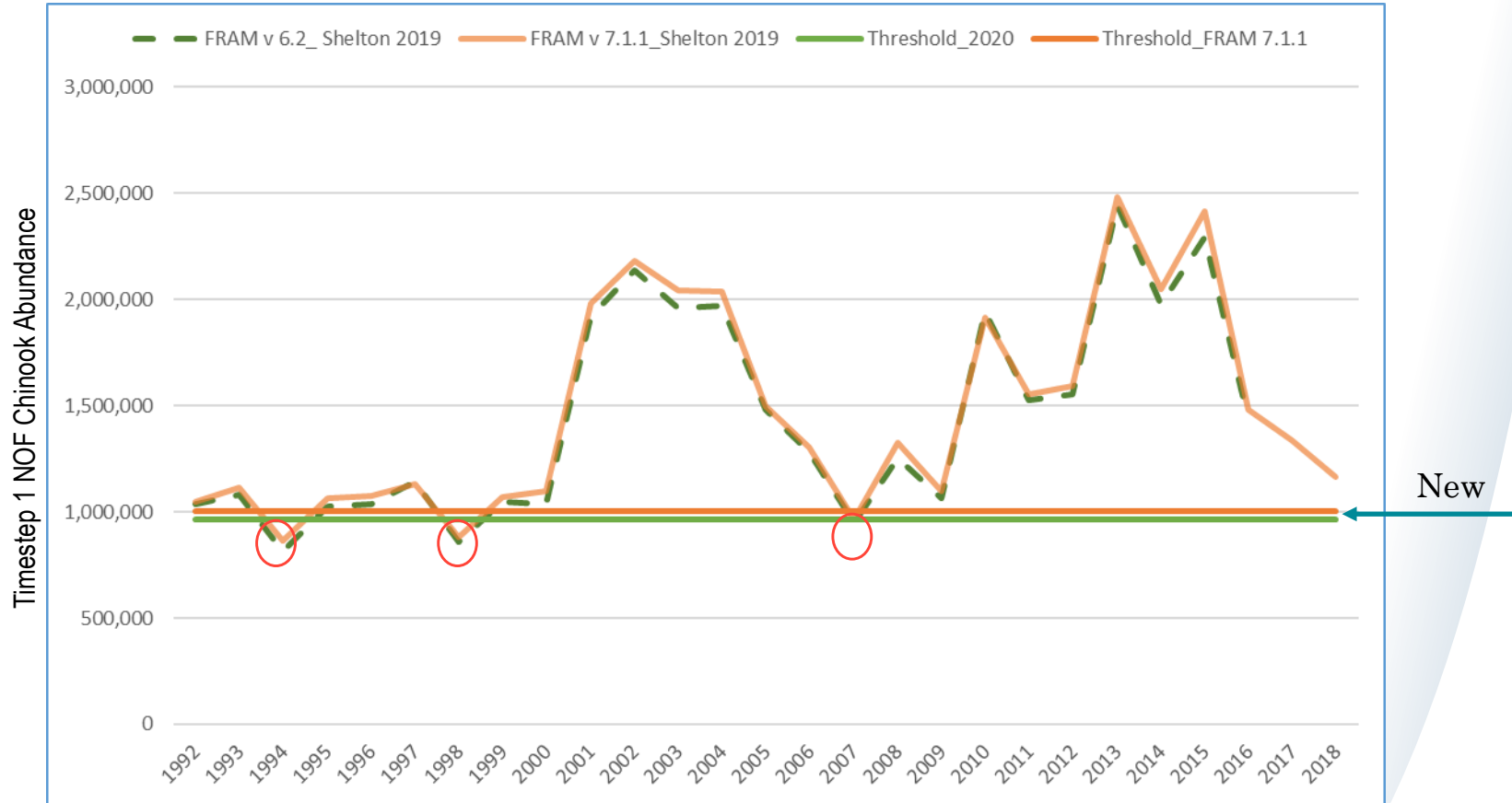


Original Threshold calculation

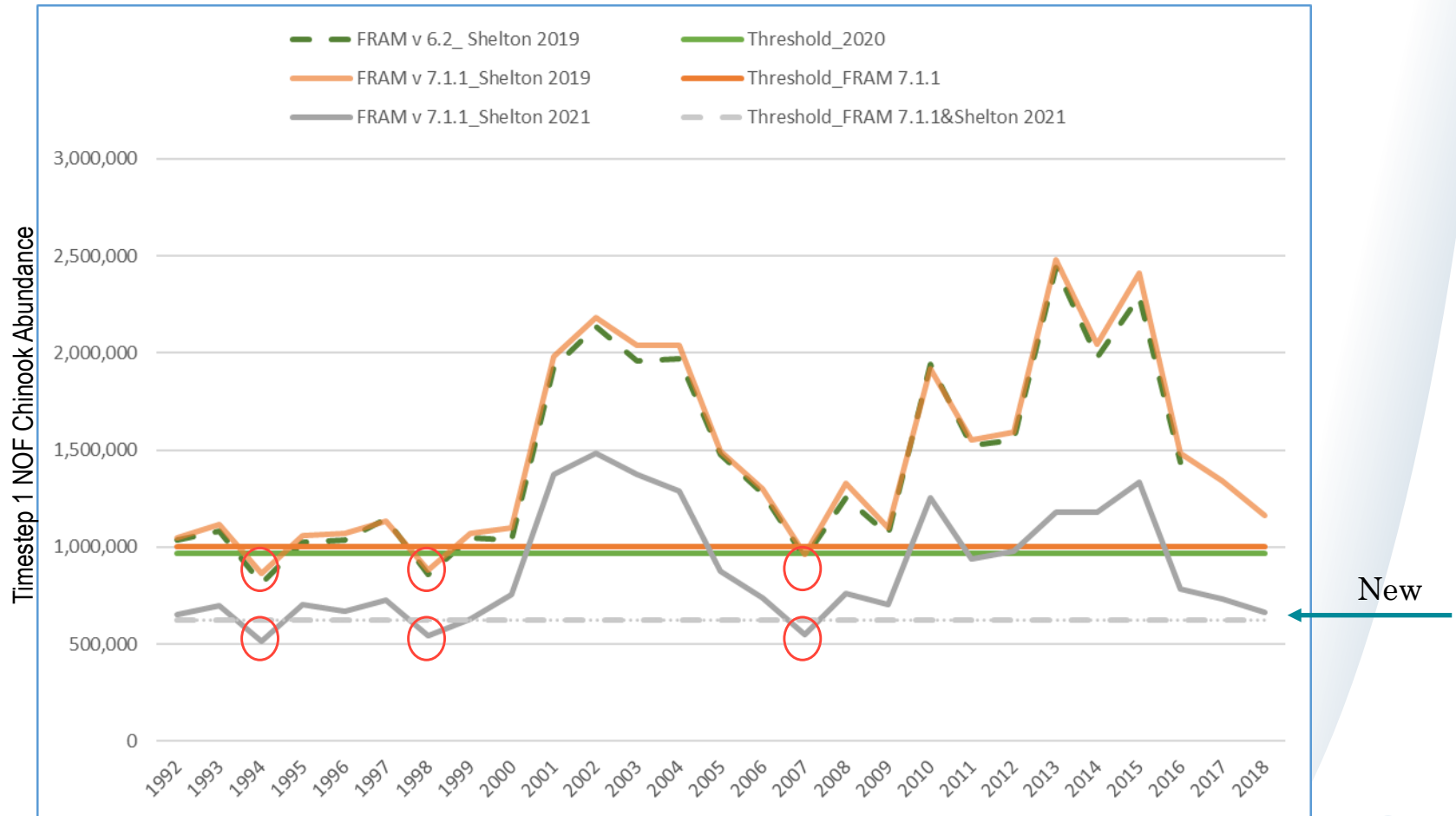


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FRAM Update from version 6.2 to version 7.1.1



FRAM Updates coupled with Shelton model updates

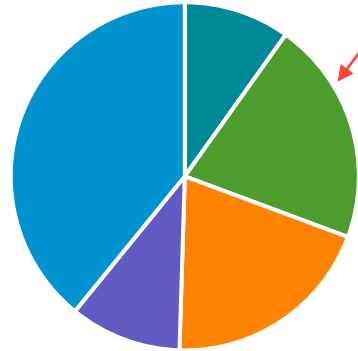


Difference from FRAM vs Shelton models

Round6.2_2019Shelton



Round7.1.1_2019Shelton



2021Shelton



■ Salish ■ NOF ■ OR ■ Cali ■ North

■ Salish ■ NOF ■ OR ■ Cali ■ North

■ Salish ■ NOF ■ OR ■ Cali ■ North

Overall abundance changes slightly (average increase of 5%) but distribution proportions stay the same

Overall abundance unchanged but distributions change



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Updating the Threshold

- Since neither FRAM nor Shelton et. al models contain SRKW data, the years used to establish the threshold (1994 – 1996, 1998 – 2000 and 2007) still have the same mix of SRKW status (e.g. fecundity, survival, population growth), with two relatively good status years (1994 and 2007) and the remaining years had fair or poor SRKW status.
- Retaining the same specific years does not change the frequency of a threshold being triggered. Updating Chinook abundances to a new lowest seven years would not maintain those connections with the SRKW i.e., the consecutive years, and so NMFS recommends continued use of the same seven years.



Recommendation:

The Council should follow the process outlined in Section 6.6.8 in the FMP: discuss and determine whether a review of the best scientific information available indicates that a modification of the Chinook low abundance threshold is necessary.

Update or not: estimate and report the pre-fishing (October 1) adult Chinook salmon abundance based on 2022 forecasts for each of the five spatial areas defined by the ad hoc SRKW Workgroup.

If the 2022 abundance estimate for NOF is less than the abundance threshold: the Council should implement the management measures as described by the FMP through Amendment 21.



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