Photo: Holly Fearnbach, SR3,
SeaLife Response, Rehabilitation and Research

Southern Resident Killer Whale Workgroup

Co-Chair, PFMC Ad Hoc SRKW Workgroup
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September 2020

Council goals for today

- Review the purpose and need, and scope of action
- Discuss the options provided and consider adding or subtracting to the list to better refine the range of alternatives
- Adopt a range of management alternatives for public review
- Kind reminder – Council is scheduled to consider adopting a final preferred alternative for recommendation to NMFS at the next Council meeting (November 2020)

Overview

- In April 2019, the Council formed the Ad-Hoc Southern Resident Killer Whale (SRKW) Workgroup and assigned them with the primary task of reassessing the effects of Council-area ocean salmon fisheries on SRKWs, and if needed:
- Develop a long-term approach that may include proposed management or conservation measures that limit Council-area ocean salmon fisheries to Chinook salmon (SRKWs primary prey)

Ad-Hoc Workgroup Progress to date

Workgroup Schedule

- The SRKW Workgroup has held 14 meetings to date; the next (on-line) meeting is Sept. 29-30, 2020
- All meetings are open to the public and provide for public input opportunity
- Meeting information and materials are posted on NOAA Fisheries SRKW and fisheries interaction workgroup webpage

https://www.fisheries.noaa.gov/west-coast/marine-mammal-protection/southern-resident-killer-whales-and-fisheries-interaction

Council Considerations and Workgroup Products

The Council has received multiple updates and reports from the Workgroup since its first meeting in May 2019

- June 2019 – Agenda Item G.2
- September 2019 – Agenda Item F.3
- November 2019 – Agenda Item E.4
- March 2020 – Agenda Item E.1
- June 2020 – Agenda Item E.2
- September 2020 – Agenda Item H.3

Draft Range of Alternatives and Recommendations

Components of draft document

- Section 1: Introduction
- Section 2: National Environmental Policy Act
- Section 3: Recommendations for Action
  - Recommendation 1 – Management strategy alternatives
  - Recommendation 2 – Re-evaluate conservation objectives for Chinook stocks
  - Recommendation 3 – Improve stock assessment analytical methods
- Section 4: References

Section 1: Introductio

Status of SRKWs (pg 3):

Over the last decade, the status of the ESA -listed Southern Resident Killer Whales has substantially declined, raising concern over their status and recovery. Since 2009, both new and additional data has been gathered that provide an updated understanding of their distribution, diet, and birth and death rates, and on the spatial distribution of different stocks of Chinook salmon prey.

Re-initiation of ESA consultation Ad-Hoc SRKW Workgroup (pg 3)

In April 2019, NMFS reinitiated ESA consultation on PFMC ocean salmon fisheries and the Council formed the SRKW Workgroup to assess the effects of implementing the Salmon FMP.

The workgroup finished their Risk Assessment in May 2020.

Photo provided by R. Ehlke

Holistic view; focused task (pg 4)

The workgroup acknowledges that there are multiple factors that all play a role in the status of SRKW acting together to impact SRKWs. Thus, while the Workgroup was assembled with salmon fishery management and whale biology expertise, it still supports a holistic approach across a realm of activities, but its focus was on Chinook salmon in PFMC fisheries.

Section 2: National Environmental Policy Act

Photo: L85, M. Pinnow.

Purpose of recommendations and proposed alternatives (pg 3):

To provide potential conservation measure(s) or management tool(s) in directed ocean salmon fisheries managed under the Council's jurisdiction throughout the EEZ, if necessary, to further limit impacts of these salmon fisheries on the Chinook salmon prey availability for SRKWs over the long term.

Need (pg 3)

To manage Council fisheries for sustainable salmon stocks & ensure that the fisheries will not jeopardize the survival and recovery of SRKWs through their effects on the abundance of Chinook salmon prey availability.

Scope of Action (pg 4)

Council-managed ocean salmon fisheries in EEZ implemented through the FMP.

Note: The Council can and does make recommendations to other entities regarding actions that are outside of its direct jurisdiction and authority that affect salmon managed by the Council.

Section 3 Recommendations for Action

Photo: Makah Indians paddle away from the rising sun as they head from Neah Bay, Washington, Photo: AP

Recommendation 1: Management strategy alternatives (pg 4)

Alternative 3.1.1 – no action (pg 4)

Alternative 3.1.2 – action based on single year; threshold based with 4 subgroups (pg 9)

Alternative 3.1.3 – action, based on multiple years; threshold based with 2 subgroups (pg 15)

Alternative 3.1.4 – action, threshold based; tiered responses (pg 15)

Recommendation 2: Re-evaluate conservation objectives for Chinook stocks (pg 15)

Alternative 3.2.1 – Sacramento River fall Chinook (SRFC) (pg 15)

Alternative 3.2.2 – Klamath River fall Chinook (KRFC) (pg 16)

Recommendation 3: Improve stock assessment analytic methods (pg 16)

Alternative 3.3 –

Develop an age structured stock assessment for SRFC using cohort reconstruction methods (pg 16)

Alternative 3.1.1: No Action – Status Quo FMP Implementation

Overview

- Continue to use existing harvest control rules and reference points as defined in the FMP on an annual basis.

- Continue to manage fisheries consistent with proposed actions described in biological opinions, reasonable and prudent alternatives, and terms and conditions addressing the effects of the fisheries on ESA-listed salmon.

- Continue to comply with accountability measures for stocks managed under regional agreements, and international agreements in which the U.S. participates such as the Pacific Salmon Treaty
  - ❖ Weak stock management – protections for weaker stack often allow healthier stock to remain unharvested
  - ❖ Resulting North of Falcon (NOF) quotas – low Chinook abundance = low Chinook quotas NOF

Alternative 3.1.2: Establish a threshold for low Chinook abundance in NOF below which some management action would be triggered


Photo: J Pod, J. Ford and S. Steven.

Under this concept (pg 4):

- Council area ocean salmon fisheries would incorporate a responsive action designed to account for the endangered and declining status of the SRKW population.
- Intuitively at some (unknown) low Chinook abundance level, the prey available to SRKWs will not be sufficient to allow for successful foraging, leading to adverse health effects.
- A threshold or floor, for low pre-fishing Chinook salmon abundance(from FRAM using Timestep 1 [TS1] starting abundance) in the NOF area below which some management action would be triggered, requiring a suite of responses to be considered when structuring that year's specific management measure recommendations.

Alternative 3.1.2: *continued*

Variations of this alternative:

- **3.1.2.a (pg 9) –** Threshold based on the year with the lowest modeled abundance (1994); result: 813,000 adult Chinook salmon (could adjust for forecast error)

- **3.1.2.b (pg 10)** - Threshold based on arithmetic mean of lowest three abundance years; result: approximately 874,000 adult Chinook salmon (could adjust for forecast error)

- **3.1.2.c (pg 10)** - Threshold based on 2020 NMFS guidance; result: approximately 966,000 adult Chinook salmon

- **3.1.2.d (pg 10)** - Threshold based on the maximum abundance during the mid to late 90s (1995, 1996, 1997, 1998, 1999, 2000); result: approximately 1,144,000 adult Chinook salmon (could adjust for typical forecast error)

Alternative 3.1.2: *continued*

Summary of Alternatives for NOF Chinook salmon abundance TS1 thresholds:

Alternative	Brief Description	Result	If adjusted for error	Comment
3.1.2.a	lowest year	813,000	968,000	1994
3.1.2.b	arithmetic mean of three lowest years	874,000	1,040,000	1994, 1998, and 2007
3.1.2.c	2020 NMFS guidance	966,000	N/A	the arithmetic mean of the seven lowest years of abundance (1994-1996, 1998-2000, and 2007)
3.1.2.d	Maximum of mid-90s	1,144,000	1,362,000	the max abundance from 1995 through 2000 occurred in 1997

**Note: These values represent the current combined outputs from the FRAM and Shelton et al. models, and are subject to change whenever recalibrating these models, but the methodology determining each value would remain fixed as described in this report.*

Alternative 3.1.2: *continued*

Photo: L41, C. Emmons

3.1.2.e (pg 11) : List of potential responses if a year's preseason projection fell below the threshold:

- The goal of management responses would be to benefit SRKW while still providing some fishing opportunity during years when the TS1 abundance projection falls below a threshold
- Responses could include but are not limited to the following six categories and items.

Alternative 3.1.2. *continued* :

3.1.2.e: List of potential responses if the TS1 abundance projection fell below the threshold:

1. Limit NOF non-treaty Chinook quotas beyond stock specific needs – consider regression relationships;
2. Attain NOF non-treaty quota incrementally over time (spring/summer split;
    a. No more than 50% of Chinook quota to spring (or a value less than the 10-yr arithmetic mean)
    b. reduce sub-area quotas during time/space overlap with SRKW
3. NOF area closures – maintain current CZs, but incorporate additions;
    a) increase area of the Columbia River CZ through June 15,
    b) increase Grays Harbor CZ closure time to include Jan.1- June 15
4. NOF start/end times – delay opening until either
    a) June 1
    b) June 15

Alternative 3.1.2: *continued*

3.1.2.e: List of potential responses if the TS1 abundance projection fell below the threshold:

5. SOF in Oregon (OR) coastal waters –
   a) delay OR SOF troll until April 1;
   b) close OR KMZ Oct. 1-Mar. 31 when CA KMZ is also closed;
   c) from Cape Falcon to Cape Meares in the SRKW critical habitat area 1 delay fisheries until either June 1 or June 15.
6. SOF in California (CA) coastal waters –
   a) Beginning Oct. 1 through Mar. 31 close the Monterey fishing subarea or close the CA KMZ as they are primary prey areas according to draft critical habitat rule
   b) Klamath River CZ area expansion remains in place beyond August; continues from September through Mar. 31
   c) Ensure other CA CZ in effect year-round

Map of SRKW Critical Habitat Areas 1 and 2

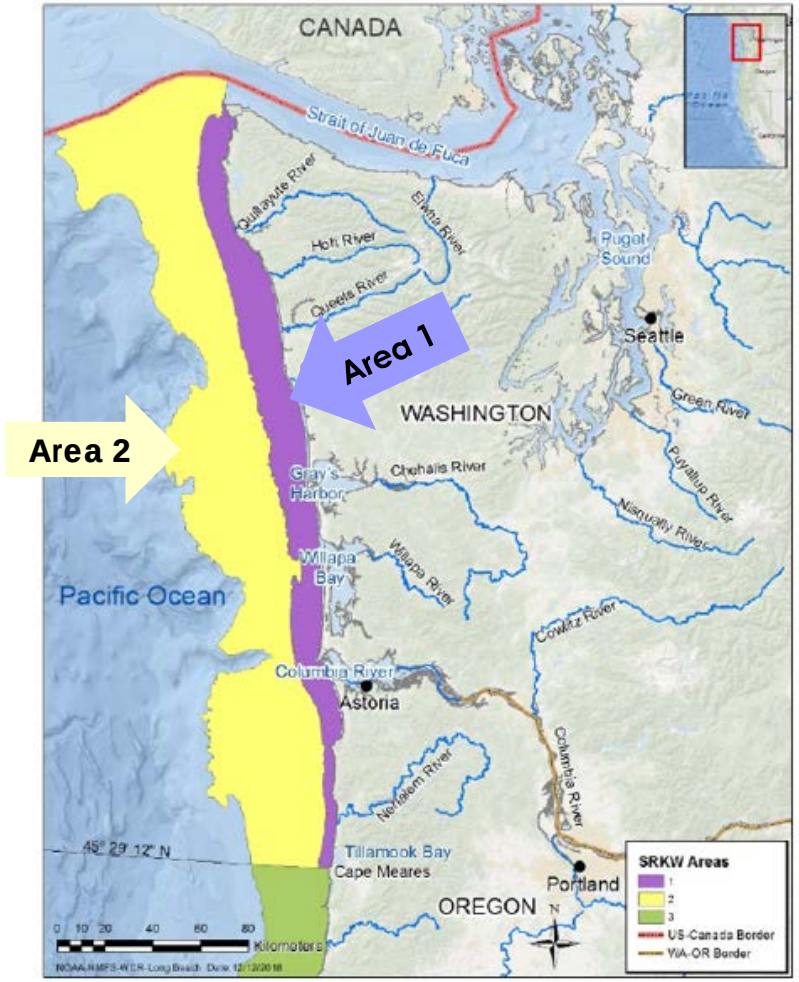

Photo by R. Leubert

Alternative 3.1.3: Establish a threshold and responses but compare to a multi-year metric to determine if TS1 abundance projection is below the threshold


Photo: J. Watson, WDFW.

Threshold triggered based on a range of years:

- **Alternative 3.1.3.a** – running 2-year geometric mean
- **Alternative 3.1.3.b** – running 3-year geometric mean
- These may decrease how often responses may be triggered; however, a single year low abundance would affect the geo-mean for multiple years – which would increase the chance that the responses would remain in place for multiple years if triggered.
- This type of approach allows for consideration of multiple years that are likely important for reproductive success of the SRKWs.

Alternative 3.1.4: Establish a threshold and if triggered in a single year select a subset of responses, if triggered in a second consecutive year add an additional response measure(s)

Tiered response:

- This option considers similar rationale to either Alternative 3.1.3.a or 3.1.3.b in that a single year below the threshold is a concern, but consecutive years below the threshold are deemed an even greater concern.
- Therefore a second consecutive year below a triggered threshold would include the subset of responses from the prior year, plus at least one additional response.

3.2 Recommendation 2: Re-evaluate conservation objectives for Chinook stocks

Review escapement objectives for major Chinook stocks in California

- **Alternative 3.2.1:** Sacramento River Fall Chinook.
    - Current range 122,000 – 180,000 hatchery and natural-area adult spawners

- **Alternative 3.2.2:** Klamath River Fall Chinook.
    - Current goal 40,700 natural-area adult spawners

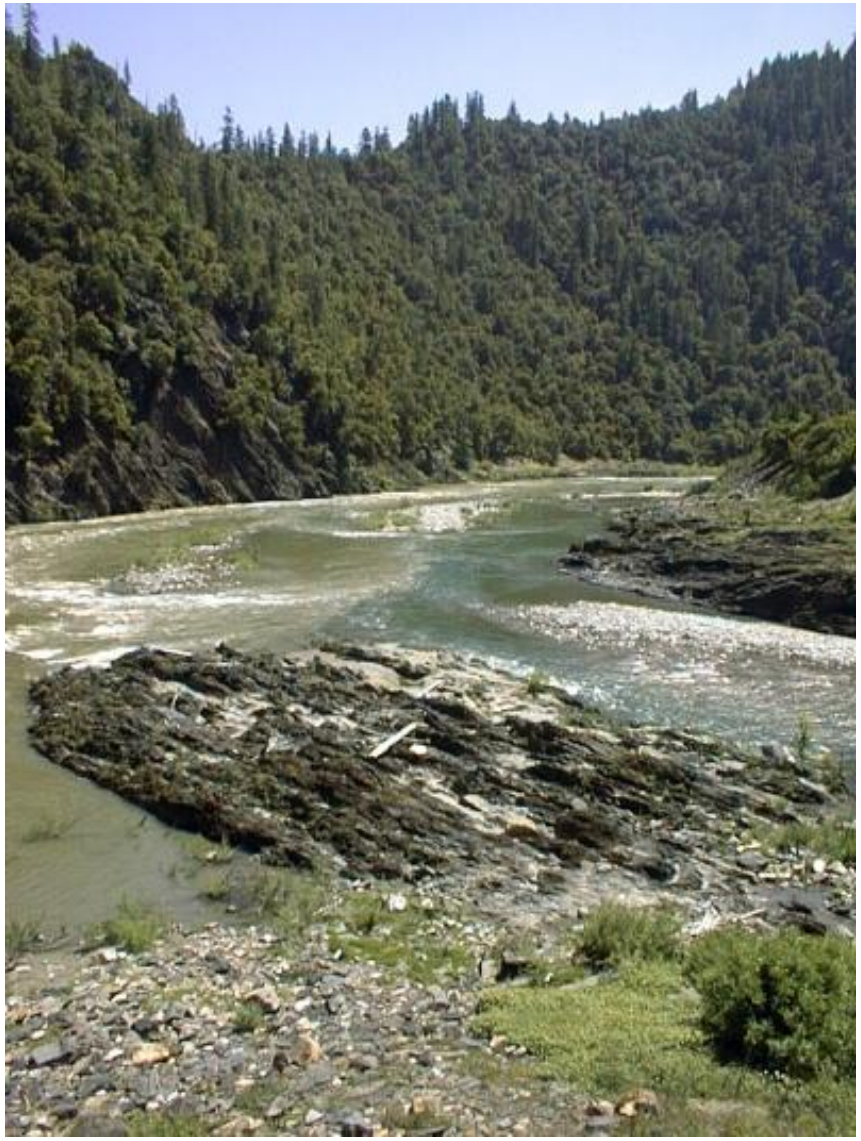

Photo by Jennifer Gilden

3.3 Recommendation 3: Improve stock assessment analytic measures

Develop an age-structured stock assessment for SRFC

- Use cohort reconstruction methods
- Provide fishery managers an improved estimate of Chinook ocean abundance during the winter period
- Tool for evaluating Chinook prey availability for SRKWs
- Better evaluate effect of ocean salmon fisheries SOF

Photo by Jill /Blue Moonbeam Studio

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QUESTIONS?
THANK YOU