

**SOUTHERN  
OREGON  
NORTHERN  
CALIFORNIA  
COAST COHO  
WORKGROUP**



**FISHERY HARVEST CONTROL RULE RISK ASSESSMENT:  
DRAFT FINAL REPORT  
NOVEMBER 2021**

# SONCC coho Workgroup

- Established by the Council in April 2020
- November 2020 PFMC
  - Progress report, Supplemental Workgroup Report 2
- April 2021 PFMC
  - Progress report
- June 2021 PFMC
  - Updated draft risk assessment, Range of Alternatives
- September 2021 PFMC
  - Review the Risk Assessment and Range of Alternatives
- November 2021 PFMC
  - Review the Range of Alternatives
  - Adopt a Final Preferred Alternative Harvest Control Rule

# Range of Alternatives

Control Rule	Maximum ER
1	0.00
2	0.07
3	0.13
4	0.14
5	0.15
6	0.16
7	0.17
8	0.18
9	0.19
10	0.20

Constant, total exploitation  
rate (ER) caps

# Workgroup focus since Sept: address Council guidance

1. Describe how Coho FRAM is used in pre- and post-season. Describe base period coded-wire tag data. Describe how non-retention impacts are determined.
2. Describe potential fishery constraints that the control rules under consideration may impose on specific ocean fisheries. Which months and sectors by region are consistently costly in terms of impacts to SONCC coho salmon?
3. Examine how the control rules might be used in a planning setting, including preseason implementation alternatives that rely on (a) preseason projections of ocean and freshwater impacts for the forthcoming season only, and (b) a multi-year running-average approach that considers the combination of preseason projections and postseason estimates.

# Changes to the Risk Assessment since Sept. 2021

- **New Appendix B:**

- *Fishery Regulation and Assessment Model (FRAM) use in preseason and postseason*

- **New Appendix E:**

- *Summary of Coho FRAM's Modeled Distribution of SONCC Coho Salmon Impacts*

- **New Appendix I:**

- *Memorandum Concerning Incorporation of Freshwater Mortality into a Total Exploitation Rate Framework*

- **Brief introductions/reference to these appendices in the text**

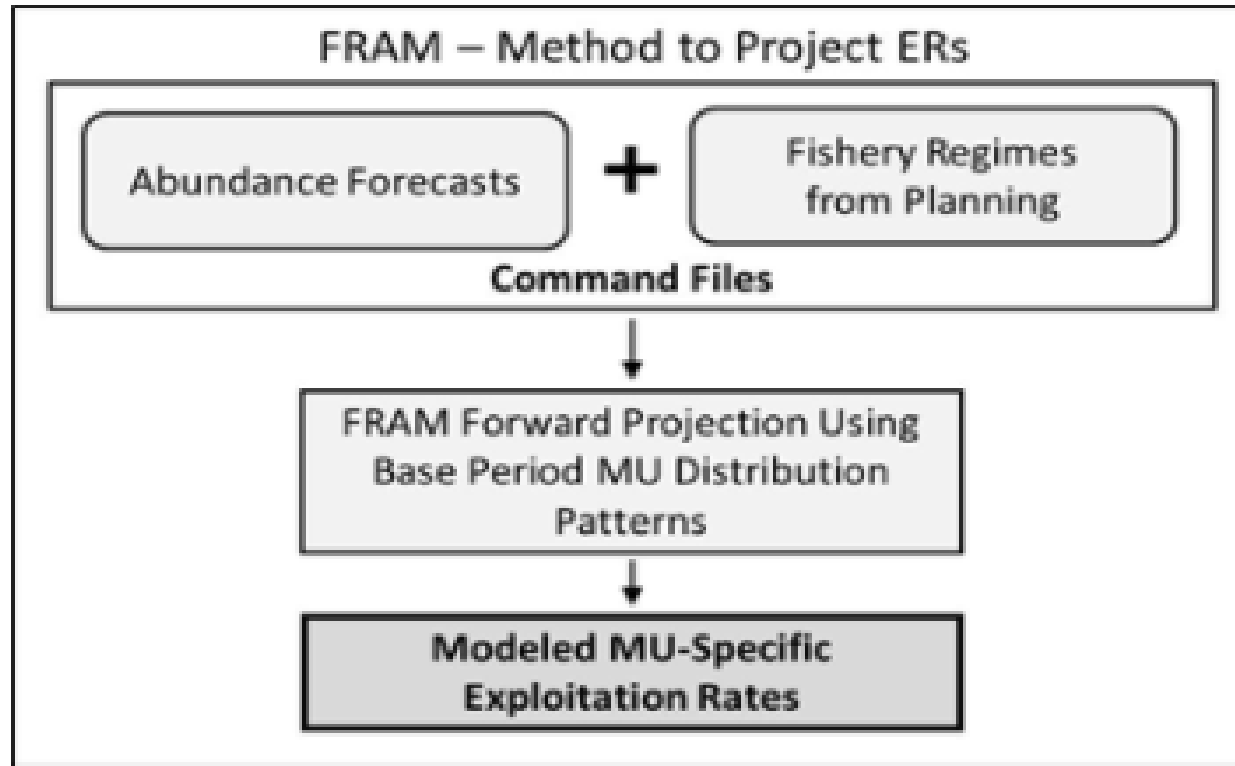
- **Some minor editorial clean-up with no impact on substance**

# Coho FRAM

From September 2021 PFMC motion:

*As described in Agenda Item F.3.a, CDFW Supplemental Report 1, ask the workgroup to include additional content in the report about the coho FRAM model and how it is used in both pre- and post-season settings to project or estimate impacts on SONCC coho salmon. This should include brief descriptions of (a) the base period CWT data used to inform the model for Rogue-Klamath coho salmon, and (b) how non-retention impacts are determined.*

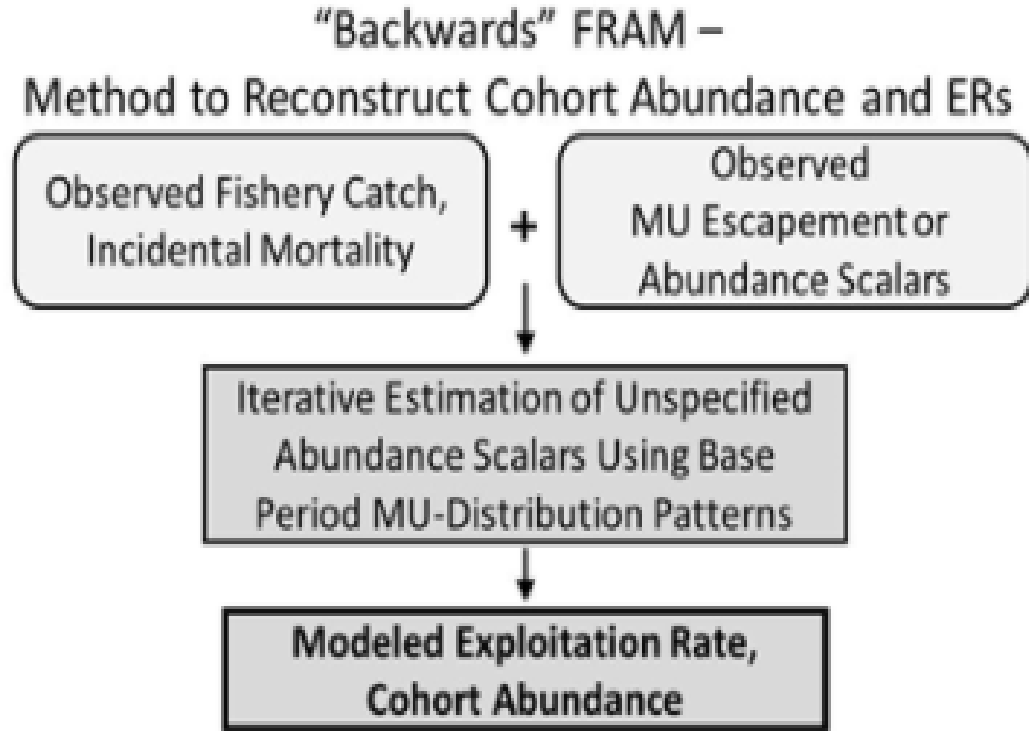
# Appendix B: FRAM use in preseason



- Project ocean ERs for unmarked Rogue/Klamath coho (and many other stocks)
- Base period CWT recoveries (catch years 1986–1992) are an important component of FRAM
- Details of FRAM use for non-retention fisheries south of Humbug Mt. OR, are described in the Appendix and the April 2018 STT statement\*

\* <https://www.pcouncil.org/documents/2018/04/agenda-item-e-1-a-supplemental-stt-report-2.pdf/>

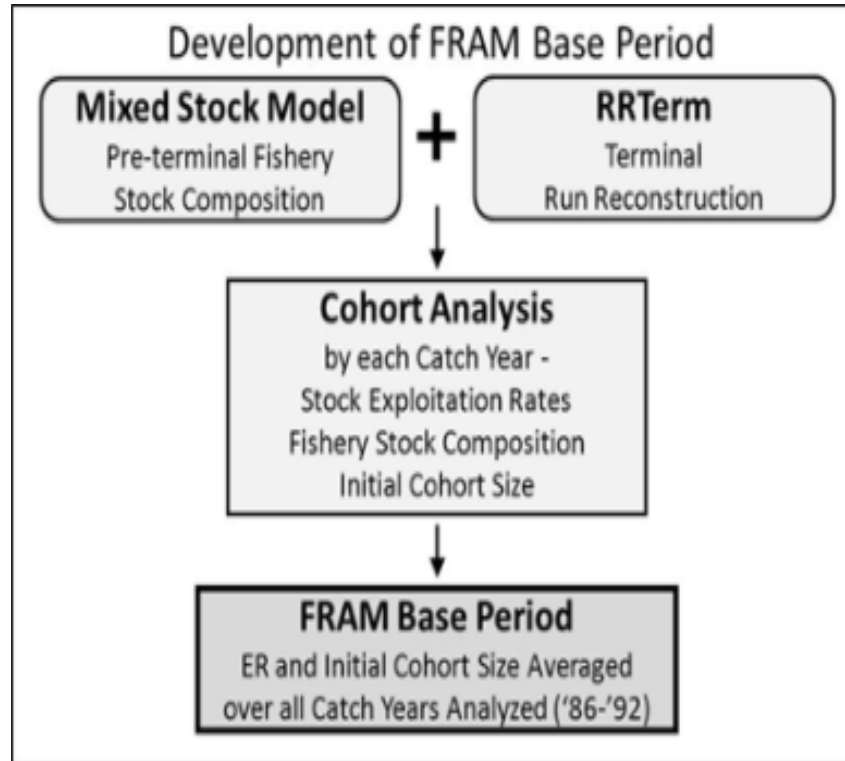
# Appendix B: FRAM use in postseason



- The Coho FRAM can also be used to recon“Backwards FRAM” derives total cohort abundance through an iterative process of estimating the set of stock abundance scalars that best explain observed escapements and reported catches
- struct stock abundances from known catch and escapement



# Appendix B: FRAM Base Period and SONCC



- Current base period 1986-1992
- Base Period developed by reconstructing abundances for each MU for each base period year
- Table of CWTs from hatchery programs used to represent SONCC in Appendix B
- See also SONCC WG supplemental report

# Coho FRAM and projection of impacts

From September 2021 PFMC motion:

*Ask the workgroup to include additional information in the report about the potential constraints the HCRs under consideration may impose on specific ocean fisheries. This additional content should illustrate the specific months and sectors by region that the FRAM coho model projects are consistently costly in terms of impacts on SONCC coho salmon.*

# **Appendix E: Summary of Coho FRAM's Modeled Distribution of SONCC Coho Salmon Impacts**

- Presents statistical summaries of preseason FRAM model run results from the recent past (2010-2019 fishing seasons, omitting 2016, 2017)
- Provides an approximate snapshot of ER highs and lows, showing relative differences under recent fishing patterns

Average ER (as %)						Minimum ER (as %)					Maximum ER (%)				
Fishery (FRAM #)	Jan-Jun	Jul	Aug	Sep	Oct-Dec	Jan-Jun	Jul	Aug	Sep	Oct-Dec	Jan-Jun	Jul	Aug	Sep	Oct-Dec
BC - WCVI Rec (190)		0.21%					0.03%					0.35%			
BC - SWVI Net (181)					0.00%					0.00%					0.00%
BC - SWVI Troll (175)		0.00%					0.00%					0.00%			
WA - A5 Rec (91)	0.00%					0.00%					0.00%				
WA - A4 Rec (41)		0.00%					0.00%					0.00%			
WA - A2 Rec (37)		0.03%					0.02%					0.03%			
OR/WA - Ast/A1 Rec (33)		0.02%	0.00%				0.01%	0.00%				0.02%	0.00%		
OR/WA - Ast/A1 Troll (34)	0.00%	0.00%				0.00%	0.00%				0.01%	0.01%			
OR - Tillmk Rec (21)	0.00%	0.02%	0.00%	0.02%		0.00%	0.01%	0.00%	0.00%		0.01%	0.03%	0.00%	0.04%	
OR - Tillmk Troll (22)	0.00%	0.00%				0.00%	0.00%				0.00%	0.00%			
OR - Nwpt Rec (17)	0.00%	0.02%	0.01%	0.02%		0.00%	0.01%	0.00%	0.00%		0.01%	0.03%	0.03%	0.03%	
OR - Nwpt Troll (18)	0.01%	0.01%	0.01%	0.00%		0.01%	0.01%	0.01%	0.00%		0.01%	0.02%	0.02%	0.00%	
OR - Coos Rec (19)	0.03%	0.07%	0.15%	0.01%		0.02%	0.03%	0.05%	0.00%		0.08%	0.11%	0.33%	0.02%	
OR - Coos Troll (20)	0.02%	0.02%	0.05%	0.00%		0.02%	0.01%	0.04%	0.00%		0.03%	0.03%	0.08%	0.01%	
OR - KMZ Rec (15)	0.06%	0.25%	0.27%	0.08%		0.03%	0.11%	0.16%	0.04%		0.09%	0.39%	0.45%	0.11%	
OR - KMZ Troll (16)	0.00%	0.04%	0.01%	0.00%		0.00%	0.01%	0.00%	0.00%		0.01%	0.13%	0.02%	0.00%	
CA - KMZ Rec (5)	0.54%	0.87%	0.65%	0.08%		0.36%	0.28%	0.27%	0.00%		0.76%	2.07%	1.15%	0.15%	
CA - KMZ Troll (6)	0.32%	0.17%	0.22%	0.12%		0.04%	0.02%	0.02%	0.07%		1.02%	0.44%	0.69%	0.18%	
CA - FB Rec (3)	0.27%	0.43%	0.13%	0.18%		0.10%	0.16%	0.05%	0.02%		0.47%	0.81%	0.23%	0.29%	
CA - FB Troll (4)	0.33%	0.59%	0.07%	0.08%		0.03%	0.13%	0.03%	0.01%		0.80%	1.30%	0.09%	0.16%	
CA - SF & MO Rec (7)	0.17%	0.30%	0.15%	0.00%		0.04%	0.12%	0.03%	0.00%		0.27%	0.46%	0.24%	0.01%	
CA - SF & MO Troll (8)	0.10%	0.08%	0.00%			0.01%	0.01%	0.00%			0.16%	0.15%	0.00%	12	

# HCR implementation

From September 2021 PFMC motion:

*How the HCRs might be used in a planning setting, including preseason implementation alternatives that rely on (a) preseason projections of ocean and freshwater impacts for the forthcoming season only, and (b) a multi-year running-average approach that considers the combination of preseason projections and postseason estimates.*

# Workgroup discussion on HCR implementation

- Discussed implementation of a multi-year running average approach to allowable ERs
- This implementation would result in:
  - Years where allowable ER was greater than the control rule-specified ER (conservation risk)
  - Years where allowable ER was lower than the control rule-specified ER (fishery risk)
- WG came to the conclusion that this HCR implementation constitutes a new HCR, which was not evaluated with the Risk Assessment model

# **Appendix I: Memorandum Concerning Incorporation of Freshwater Mortality into a Total Exploitation Rate Framework**

- This memo briefly characterizes how freshwater fishery harvest rates could be converted into exploitation rates
- These could then be combined with ocean fishery ERs generated by the Salmon Technical Team (STT) to calculate a total ER
  - All control rules in the range of alternatives are specified in terms of total ERs
- Has relevance to PFMC fishery planning and postseason assessment

# Supplemental Workgroup Report

- The WG submitted a supplemental report consisting of the number of coded-wire-tag recoveries included in the current FRAM base period
- Presents the raw number of ocean recoveries by fishery and time period
- Presents the estimated number of recoveries (expanded for sampling) by fishery and time period
- Purpose was to shed light onto the core data in the FRAM base period that is most relevant to SONCC coho modeling, beyond what is presented in Appendix B and E.



FRAM fishery details			Observed tags						Estimated tags (expanded for sampling)					
#	Short Name	Full Name	Oct-Jun	Jul	Aug	Sep	Oct	All TS	Oct-Jun	Jul	Aug	Sep	Oct	All TS
3	Ft Brg Spt	Fort Bragg Sport	13	44	10	6		73	57	157	29	18		260
4	Ft Brg Trl	Fort Bragg Troll	136	296	51			483	605	1,439	260			2,304
5	Ca KMZ Spt	KMZ Sport	159	731	143	17		1,050	508	2,241	559	71		3,380
6	Ca KMZ Trl	KMZ Troll	179	12		38	1	230	664	45		134	8	851
7	So Cal Spt	So Calif. Sport	14	11	8	1		34	33	34	44	3		114
8	So Cal Trl	So Calif. Troll	28	25	4	1		58	275	264	47	13		598
15	Brkngs Spt	Brookings Sport	25	315	193	51	2	586	43	658	313	104	3	1,119
16	Brkngs Trl	Brookings Troll	12	43	91	15	1	162	25	62	149	21	0	257
17	Newprt Spt	Newport Sport	5	4	8	2		19	9	11	20	3		44
18	Newprt Trl	Newport Troll		16	30	3		49		35	130	5		169
19	Coos B Spt	Coos Bay Sport	25	30	47	4		106	53	75	112	9		249
20	Coos B Trl	Coos Bay Troll	1	69	71	18		159	3	264	260	72		599
21	Tillmk Spt	Tillamook Sport		1				1		1				1
22	Tillmk Trl	Tillamook Troll		3				3		15				15
33	A1-Ast Spt	WA Area 1 & Astoria Sport	2	6	1	1		10	4	18	2	3		28
34	A1-Ast Trl	WA Area 1 & Astoria Troll		1				1		3				3
37	Area 2 Spt	WA Area 2 Sport		1				1		3				3
41	Area 4 Spt	WA Area 4 Sport		1				1		1				1
175	SW VI Trl	SW Vancouver Island Troll		2				2		9				9
181	SW VI Net	SW Vancouver Island Net					2	2					3	3
190	WC VI Spt	West Coast Vanc Is Sport		1				1		26				26
196	NW AK Trl	SEAK Northwest Troll			1			1			0			0
Grand Total			599	1,612	658	157	6	3,032	2,278	5,363	1,925	454	15	10,034

# Summary

- A Range of Alternatives was adopted at the June 2021 PFMC meeting
- Council guidance from the Sept 2021 meeting was to address three items
  - Items 1 and 2 have been addressed in Appendix B and E, respectively
  - Item 3 has been addressed here, with a description of the WG discussion
- A new Appendix I was produced in an effort to aid incorporation of freshwater fishing mortality into a total ER management framework
- Council may consider adoption of a Final Preferred Alternative at this meeting

# Range of Alternatives

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