

GROUND FISH MANAGEMENT TEAM REPORT ON ENDANGERED SPECIES ACT SALMON MITIGATION MEASURES- SCOPING

The Groundfish Management Team (GMT) received an overview of the National Marine Fisheries Service (NMFS) report under this agenda item. According to the overview and the situation summary, the objective of this agenda item is to address the remaining Terms and Conditions (T&Cs) in the 2017 Salmon Incidental Take Statement (ITS) that was developed as part of the 2017 consultation on the ongoing effects of the groundfish fishery on Chinook and coho salmon.

Specifically, the T&Cs that need to be addressed at this meeting are:

- 2.b.-If needed, the Council will develop and recommend to NMFS inseason measures designed to keep the sectors from exceeding their Chinook salmon bycatch guidelines (11,000 for whiting and 5,500 for non-whiting).
- 3.a.-Allow for inseason action to prevent any exceedance of a sector guideline plus the full amount of the Reserve (exceedance of the guideline and Reserve by a sector would result in reinitiation).
- 3.a.-Inseason action to minimize the chance that the Reserve is used in three out of five years.
- 3.c.-If it is anticipated that the coastwide bycatch will exceed the sector guidelines (11,000 and 5,500 Chinook salmon), NMFS and the Council will take action to avoid exceedance of either guideline.

The 2017 Salmon ITS included a Chinook salmon take threshold for the whiting sector (11,000 Chinook salmon) and the non-whiting sector (5,500 Chinook salmon), as well as a reserve amount of 3,500 Chinook salmon. Beginning in 2019, if a sector takes its Chinook salmon threshold, plus the reserve amount, that sector would be closed for the remainder of the year. Additionally, if both sectors take their combined thresholds plus the Reserve (a total of 20,000 Chinook salmon), the entire groundfish fishery (including the coastal treaty tribes) will be closed for the remainder of the year.

Considerations in Development of Mitigation Measures

At this meeting, the Council is tasked with scoping additional mitigation measures to limit Chinook salmon bycatch, prevent the exceedance of sector-specific Chinook salmon thresholds, and reduce the need to access the Reserve. Below, the GMT describes the current mitigation measures available in regulation; those currently in development through rulemakings; and potential new mitigation measures for the Council to consider for future use. When considering the development of new measures and their applications, the GMT believes it is important to evaluate the need for new mitigation measures, and whether each mitigation measure will achieve the intended result.

Chinook Salmon Take with Groundfish Fisheries

Based on the available data, including catch through October 31, 2018, the GMT believes that under the current fishery regulations there is little risk that either sector would exceed their sector threshold, and even less risk that the combined sectors would reach the combined sector thresholds

plus the Reserve (20,000 Chinook salmon), which would result in the automatic closure of all groundfish fisheries for the remainder of the year.

As shown in Table 1 and Figure 1, total annual Chinook salmon bycatch has only exceeded 20,000 fish once in the past 15 years (in 2003). That year saw exceptionally high bycatch in the bottom trawl fisheries, which has declined to less than 1,500 Chinook salmon annually from 2005 to present day; the non-whiting fishery also saw a dramatic decline in bycatch amounts and rates, partially attributable to the buyback in 2004. Although the whiting sector exceeded their threshold twice, their take has never exceeded 14,500 (threshold plus reserve of 3,500). Furthermore, total retrospective Chinook salmon bycatch has typically ranged from 3,000-7,000 fish since 2006, with an atypically high year in 2014; while more than double the typical amount of Chinook salmon were taken in 2014, this remained well below the 20,000 fish threshold. In 2017 and through October 31 of 2018, approximately 50 percent of the annual whiting threshold had been taken and less than 20 percent of the annual non-whiting threshold was taken in either year. These low levels occurred despite the recent emergence of non-whiting midwater rockfish fishery; the impacts of the midwater rockfish fishery was noted as highly uncertain in the salmon Biological Opinion (BiOp). The GMT is cautiously optimistic that bycatch will remain low.

A bootstrap analysis conducted by the GMT provides further evidence of the unlikelihood that 20,000 Chinook salmon will be taken in the future. This analysis showed that 1,000 simulations that randomly paired historical¹ catch amongst the fisheries resulted in zero simulations exceeding the 20,000 Chinook salmon threshold. Notably, this simulation may be conservative as it included data from 2003 when bottom trawl fisheries were not attempting to avoid salmon bycatch to the same degree as they do at present.

Additionally, in recent years the trawl fishery has vastly improved their ability to avoid salmon bycatch. At-sea sectors have instituted voluntary move along rules and hotspot closures. The shoreside midwater and gear rule exempted fishing permit (EFP) also self-instituted move along rules, as described in [Agenda Item I.8, Supplemental Attachment 2, September 2018](#). These types of voluntary avoidance measures have also likely resulted in reduced salmon bycatch.

¹ Each simulation included a random draw from each fishery, despite midwater non-whiting only occurring in recent years. The draw pool consisted of 2002-2017 for whiting and tribal, 2004-2017 for bottom trawl to exclude pre buy-back, 2015-2017 for midwater non-whiting, and a flat 500 for recreational and fixed gear.

Table 1. Historical Chinook salmon bycatch in relation to the thresholds.

Sector		2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Whiting	At-sea	1,663	2,617	803	3,958	1,192	1,317	718	318	714	3,989	4,209	3,739	6,695	1,806	3,051	3,772	4,402
	Shoreside/IFQ	1,062	425	4,206	4,018	839	2,462	1,962	278	2,997	3,722	2,359	1,263	6,898	2,002	738	1,394	1,330
	Tribal (all fisheries)	1,018	3,439	3,740	3,985	1,940	2,404	697	2,147	678	906	17	1,025	154	1	200	577	125
	Total	3,743	6,481	8,749	11,961	3,971	6,183	3,377	2,743	4,389	8,617	6,585	6,027	13,747	3,809	3,989	5,743	5,607
	Threshold	11,000																
	% Threshold	34%	59%	80%	109%	36%	56%	31%	25%	40%	78%	60%	55%	125%	35%	36%	52%	53%
	# above threshold	---	---	---	961	---	---	---	---	---	---	---	---	2,747	---	---	---	---
Non-whiting	Bottom trawl	15,384	16,855	1,773	816	61	191	419	308	237	175	304	323	984	1020	374	243	348
	Mid-water a/	45	45	45	45	45	45	45	45	45	45	45	45	45	661	484	42	45
	Rec + FG max b/	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500	500
	Total	15,929	17,400	2,318	1,361	606	736	964	853	782	720	849	868	1,529	2,181	1,358	785	893
	Threshold	5500																
	% Threshold	290%	316%	42%	25%	11%	13%	18%	16%	14%	13%	15%	16%	28%	40%	25%	14%	16%
	# above threshold	10929	12400	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Total	Total Chinook	19,672	23,881	11,067	13,322	4,577	6,919	4,341	3,596	5,171	9,337	7,434	6,895	15,276	5,990	5,347	6,528	6,500
	Closure threshold	20,000																
	% of threshold	98%	119%	55%	67%	23%	35%	22%	18%	26%	47%	37%	34%	76%	30%	27%	33%	33%
	# above threshold	---	3881	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

a/ EFP including in mid-water because almost exclusively targeting rockfish in mid-water column despite using "bottom trawl" gear in 2017

a/ But excludes 173 chinook EFP trip from Noah's Ark since were using "non-EFP" large footrope for DTS

a/ These 173 from Noah's Ark included b. trawl total which is more fitting due to fishing DTS

a/ Assume 45 each year, which is the high from 2017-2018 when fishery re-emerged

a/ Actual mid-water catches were 661 in 2015 and 484 in 2016, but were not deemed reflective of fishery as was before canary rebuilt and widow quotas low

b/ Assume 500 each year: maximum of total rec + FG (154) from Table 2-53 of BiOp + cushion of 346

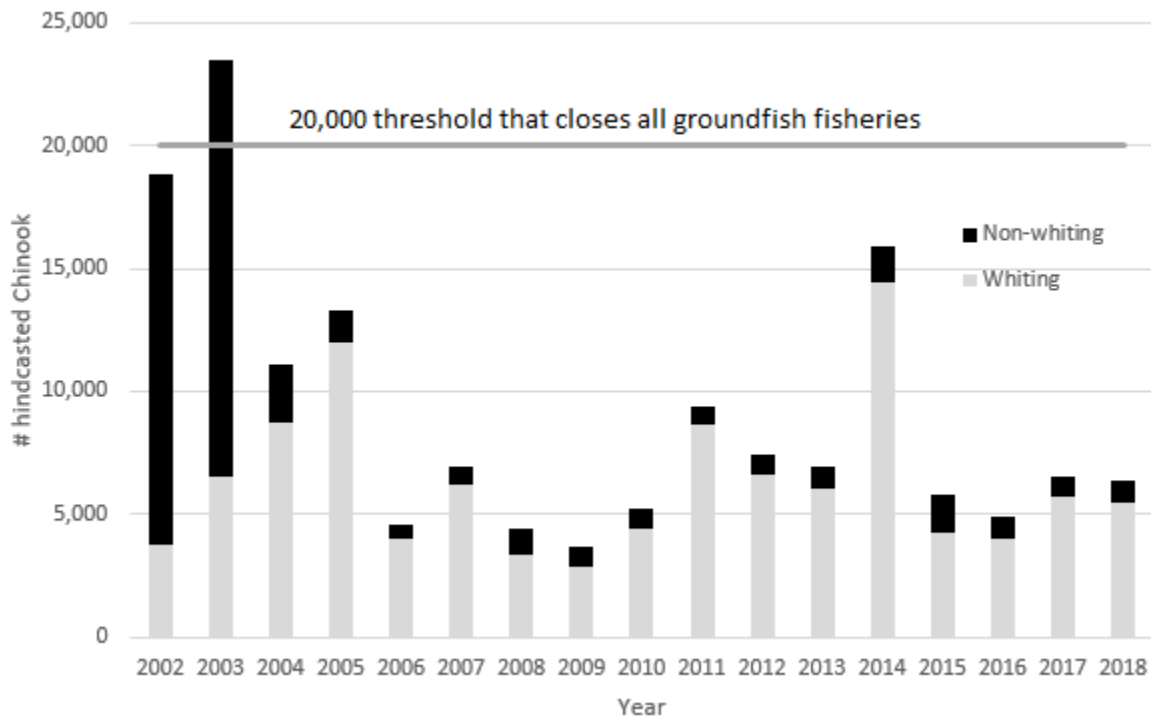


Figure 1. Annual Chinook salmon bycatch in relation to the 20,000 threshold that would close all groundfish fisheries.

Keeping in mind all of the considerations described above, below is a list of the current and proposed potential management measures. If the Council chooses, over the winter, the GMT could analyze the list of mitigation measures selected for analysis by the Council at this meeting and can provide an assessment of the effectiveness of each item, as well as the appropriate application of each measure. These measures could then be considered in development of the “rules for accessing the Reserve” (discussed below).

Salmon Bycatch Mitigation Measures

Below are two lists: mitigation measures currently available in regulation, and mitigation measures currently included in proposed (e.g., 2019-20 harvest specifications and management measures) and upcoming (e.g., the Essential Fish Habitat Conservation Area (EFH)/Rockfish Conservation Area (RCA) rulemakings).

Currently In Regulation:

- Delaying the start of the Primary whiting season until May 15 for all sectors, north of 40° 30' N. lat.
- Prohibition of at-sea processing south of 42° N. lat.
- 10,000-lb trip limit restriction on targeted harvest of whiting inside 100 fathoms in the Eureka area.
- When shorebased whiting is allowed to begin fishing on April 15 south of 40° 30' N. lat., no more than five percent of the shorebased allocation may be taken prior to the opening of the main shorebased fishery on May 15.

- Altering the start of the Primary whiting season based on the availability and stock status of prohibited species (e.g., salmon).
- Whiting midwater trawling is prohibited within the nearshore Klamath and Columbia River Salmon Conservation Zones.

In Current Rulemakings:

- Groundfish bottom trawl, except selective flatfish trawl gear, and midwater trawl gear are prohibited within the nearshore Klamath and Columbia River Salmon Conservation Zone (expected to be available January 1, 2019).
- 200-fathom Bycatch Reduction Area (BRA) for whiting and non-whiting midwater trawl (expected to be available January 1, 2019).
- Automatic closure of a sector when the sector's Chinook salmon take reaches the sector's threshold plus the available amount of the Reserve, and closure of the other sector following that sector's Chinook salmon take reaching the sector's threshold (expected to be available January 1, 2019).
- Automatic closure of all groundfish fisheries (including the coastal treaty tribes) when the combined total take of Chinook salmon for both sectors (whiting and non-whiting) reaches the combined sector threshold (20,000 Chinook salmon) is taken (expected to be available January 1, 2019).
- Block area closures (BACs) for groundfish bottom trawl (proposed in the EFH/RCA rulemaking package; expected to be available at the start of 2020).

New Salmon Bycatch Mitigation Measures

Below is a brief description of potential new salmon bycatch mitigation measures. As the Council action for this agenda item is only scoping, the Council could select any, none, or all of these management measures for further analysis by the GMT over the winter.

Integrating Trawl Gear Spatial Management Tools

BACs, currently under development as a part of the EFH/RCA action, would be implemented as a routine action to mitigate salmon bycatch at any management or latitudinal line in regulation for bottom trawl gear. The GMT sees benefit in scoping BACs as a management tool available for any trawl gear. As a reminder, the Council developed a BRA at 200 fathoms during the 2019-20 harvest specifications for mitigating salmon bycatch. The BRA, which could be implemented inseason, would prohibit vessels using midwater gear from fishing shoreward of a boundary line approximating 200 fathoms. Prior to taking action on the 2019-20 harvest specifications and management measures in June 2018, NMFS alerted the Council that the current BRAs at 75, 100, and 150 fathoms had not previously been analyzed for use to mitigate salmon bycatch, and therefore would not be available in regulation for that purpose. The GMT believes that analyzing BACs for use as a mitigation tool for all groundfish trawl gear, as opposed to additional BRAs, would be advantageous, because it would simplify regulations and could allow more targeted bycatch mitigation.

Selective Flatfish Trawl

In the proposed trawl gear rule package ([83 FR 45396](#)), vessels will no longer be required to fish with selective flatfish trawl gear (SFFT) shoreward of the RCA (except for the area between 40°

10' and 42° N. lat.)² and will be allowed to use any type of small footrope trawl gear. SFFT were designed to target flatfish while allowing stronger swimming rockfish to swim up-and-over the cut-back headrope (Figure 2); in contrast, typical bottom trawls have a “hooded” headrope that typically has lower escapement.

While SFFTs could also be an effective means to reduce bycatch of strong swimming salmon, ([Draft Environmental Assessment Trawl Gear Regulations](#); [Agenda Item F.3.a, Supplemental NMFS PPT, April 2017](#)), they have not yet been analyzed as a salmon mitigation tool that could be implemented inseason. If analyzed and included as a routine management measure, the Council and NMFS could implement a requirement to use SFFT gear in a specific area or region if the non-whiting trawl fishery were to address high bycatch of salmon. This would also allow for analysis of the efficacy of SFFTs in waters seaward of the RCA, addressing input from trawlers who note this could be an effective tool for reducing salmon bycatch gears in all depths.

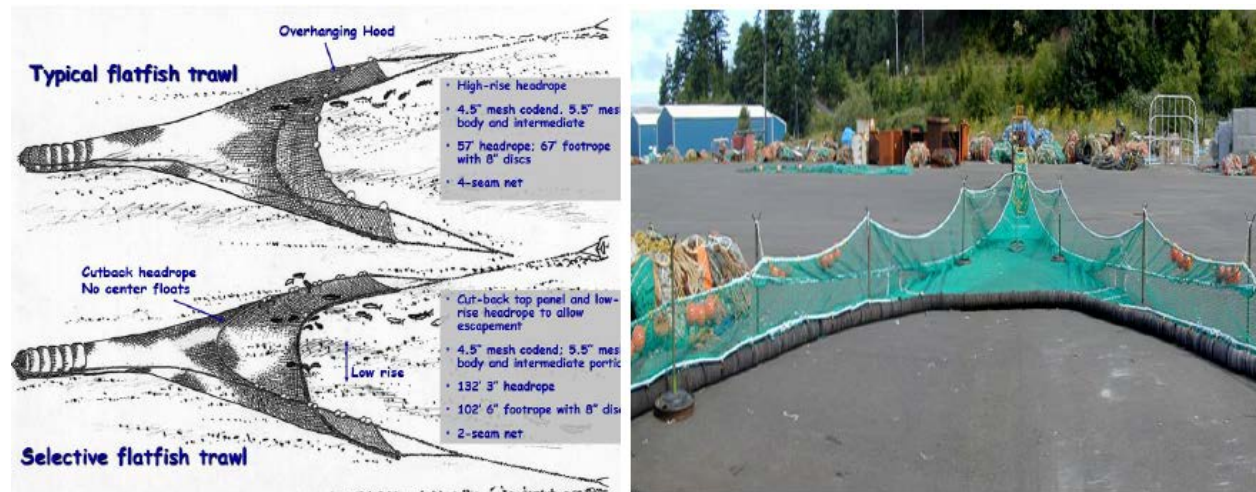


Figure 2. Comparison of SFFT vs traditional hooded trawls, which demonstrates why the cut-back head-ropes of SFFT that allow salmon to swim up-and-over are an effective means for reducing Chinook salmon bycatch.

Recreational and Fixed Gear Fisheries

Previously, Council and advisory bodies have discussed the desire to establish a fixed amount of salmon within the 20,000 Chinook salmon groundfish fishery hard-cap for the recreational and fixed gear (FG) fisheries. The intent for this fixed amount would be to protect the non-trawl fisheries from closing should the trawl fisheries take the remaining 19,500 Chinook salmon.

In developing an appropriate fixed amount, the GMT reviewed the total maximum projected impacts to Chinook salmon from the groundfish recreational and fixed gear sectors. As a reminder, recreational groundfish fisheries includes those fisheries that occur outside of the recreational

² The 2017 Salmon BiOp required that prior to allowing any additional non-whiting trawling south of 42° N. lat., NMFS would need to implement an EFP to gather information on bycatch and stock composition for a minimum of three years (T&C 4.b). Therefore, the area between 40° 10' and 42° N. lat. is proposed to operate under an EFP to exempt vessels from the SFFT requirement in 2019.

salmon seasons, and the Oregon longleader fishery. According to the 2017 Salmon BiOp, total Chinook salmon bycatch is estimated to be a maximum of 154 fish annually. The BiOp also provides for an additional buffer of 250 salmon for these fisheries, resulting in an annual estimated impact for the FG and recreational fisheries of 404 Chinook salmon ([Agenda Item H.5.a, GMT Report 1, March 2018](#)). CDFW then provided input in April 2018 that their recreational impacts were based on California recreational salmon seasons being open, and their impacts could be higher (by ~225 Chinook salmon) if the salmon seasons were to be closed in the future ([Agenda Item F.5.a., Supplemental GMT Report 3, April 2018](#)). However, the GMT suggests a fixed amount of 500 Chinook salmon for the groundfish FG and recreational fisheries should be able to account for potential salmon bycatch in the recreational and FG fisheries without being constraining. This amount is an increase of almost 20 percent (96 Chinook salmon) over the total annual estimated impacts.

If the Council is interested in assigning a fixed amount of Chinook salmon to the recreational and fixed gear fisheries, this could be accomplished by establishing a 19,500 Chinook salmon sub-cap for the groundfish trawl fisheries only, in order to leave 500 fish for the recreational and FG fisheries. If the total of the preliminary recreational impacts and a conservative estimate for fixed gear is below 500, then the trawl fisheries could be allowed to exceed the sub-cap. This exceedance amount would be minimal, given that the maximum Chinook salmon impacts estimated for the recreational and FG fisheries is 404. All groundfish fisheries would still be closed through automatic action once they reached or are projected to exceed 20,000 Chinook salmon.

Improvements to salmon inseason data collection in recreational fisheries will help the Council and NMFS better assess impacts. Note that inseason estimates are not available for the FG fisheries, and only preliminary estimates can be provided inseason for the recreational fisheries. The GMT encourages that the states work to provide inseason salmon estimates to RecFIN that also include a field to denote whether or not the salmon bycatch is applicable to the threshold or not, which is based on whether or not the salmon season is open.

At-sea Cooperative Rules

The mothership (MS) and catcher/processor (CP) sectors use a variety of management tools to successfully self-manage their fishery and reduce impacts to Chinook salmon bycatch (e.g., move-along rules). If the Council chooses, these cooperative rules could be formalized in regulation and used inseason to address concerns with high bycatch in the whiting sector. The at-sea sector could still self-manage their fishery and work with NMFS and the Council to formalize any management measures they may take through the season.

Reserve Access

The GMT has extensively deliberated on how to manage access to the Reserve, which included discussion of a process to keep sectors from exceeding their guidelines (T&C 3.c) and the guidelines plus the Reserve (T&C 3.a; [Agenda Item H.5.a, GMT Report 1, March 2018](#)). Once the Council identifies the suite of new mitigation measures for analysis, the GMT proposes that the team analyze the effectiveness of the new measures and develop a straw man proposal on how and when the Council would use them. This could include a trigger for action, identification of the sectors the action applies to (e.g., sector-specific or fishery-specific), guidance for implementation (routine inseason action or automatic action), and guidance for removing or adjusting the action

(e.g., would the action expire or could the Council remove or adjust based on updated fishery information).

Monitoring and Reporting

As a reminder, the GMT will begin providing an inseason Chinook salmon scorecard under the inseason agenda item at each Council meeting beginning in March 2019 to better facilitate inseason management. Additionally, the 2017 Salmon ITS requires the following additional new reporting tools that should be considered when discussing when and how to implement management tools to address bycatch (Table 2). The GMT believes that these reports will provide specific points at which the Council could review the data and make recommendations for any inseason action. These check-in points can be built into the process for accessing the Reserve and overall salmon bycatch management in the groundfish fishery.

Table 2. Required monitoring and evaluations of the 2017 Salmon ITS.

T&Cs	Report	Timeline	Notes
T&C 1.a	Continue to monitor and report salmon bycatch in the trawl fisheries on a weekly basis.	Inseason and ongoing	Already in place and available to management
T&C 1.b	Evaluate and report changes in the geographic and temporal distribution of fishing effort by gear type.	Biennial and ongoing	First fishing effort report published in 2015; will now be used to assess significant changes.
T&C 5.b	Identify (i) indicators relating to anomalous ocean conditions to salmon bycatch and (ii) indicators potentially predictive of high salmon bycatch	Over the next two years, then every five years after.	
T&C 5.c	Report on high bycatch times/areas/conditions for future management measures	Over the next two years, then every five years after.	First report anticipated for November 2019 Council.
T&C 6.a	Annual post-season report.	Annual by November 1.	Starting November 1, 2019.

Recommendation

The GMT recommends the Council direct the GMT to:

- review and analyze the new management measures listed in this document (BACs, SFFT, recreational and fixed gear management, and cooperative rules), among others they may be interested in further scoping to reduce salmon bycatch

- **develop a straw man example of the process for Reserve access, and**
- **report our findings in the advanced briefing book for the March or April 2019 Council meeting.**

PFMC
11/07/18