Agenda Item H.5.a
Supplemental GMT Presentation 1
March 2018

SALMON ITS: MITIGATION MEASURES AND RESERVE RULES ANALYSIS

Agenda Item H.5.a, GMT Report 1, March 2018

Reasonable and Prudent Measures (RPMs)

1. Monitoring
2. Developing Measures to Keep Bycatch within Guidelines
3. The Reserve
4. New Times and Areas
5. Identifying and Addressing High Bycatch Times/Areas/Conditions
6. Reporting and Evaluation

RPM 1: Monitoring

"NMFS, in consultation with the Council, will review existing mechanisms for monitoring salmon bycatch in the groundfish fishery, and will develop mechanisms--if they do not already exist--that, a) provide timely inseason data regarding the amount and location of salmon bycatch by sector, and; b) provide timely inseason data regarding the geographic distribution of the at-sea whiting fleet."

- T&C 1.a.i: requires NMFS to monitor inseason bycatch for the trawl fisheries
- T&C 1.a.ii: assess the quality of this data and ensure it is comparable or better to current collected information
- T&C 1.a.iii: monitor location of bycatch, collect coded wire tags (CWT) and other biological information (specifically genetic samples from all whiting, bottom trawl, and non-whiting midwater trawl fisheries)
- T&C 1.a.iv: track the distribution of fishing effort

Whiting Sector Data Availability

Sub-Sector	Reporting Time	Location Information Available	Biological Information Available	Source	Model for Projection?
At-Sea	24 hours	Yes- coordinates of haul	Sex, length/frequency, CWT, adipose fin presence, genetic data	NORPAC	Yes (bootstrap or bycatch ratio)
Shoreside	~24 hours or less	Yes- IFQ catch area at the trip level within 24 hours. Logbooks available within ~ 1 week. Haul-level estimates of salmon catch available the following year.	Sex, length/frequency, CWT, adipose fin presence, genetic data	Maximized retention, salmon landed on etix w/ no value	Yes (bycatch ratio)
Tribal	Weekly, automatic notification if over 20 Chinook in a single tow	Within U&A boundaries	Length frequency, CWT, adipose fin presence	Tribes	No

Non-Whiting Sector Data Availability

Sub-Sector	Reporting Time	Location Information Available	Biological Information Available	Source	Model for Projection?
Midwater/ Bottom trawl	~24 hours or less	Yes- IFQ catch area at the trip level within 24 hours. Logbooks available within ~ 1 week. Haul-level estimates of salmon catch available the following year.	Sex, length/frequency, CWT, adipose fin presence, genetic data.	EM vessels: Report salmon landed on etix w/no value. Observed vessels that sort at sea: Report to PacFIN within 24 hours.	Yes (bycatch ratio)
Non- Nearshore	Not available until fall of following year	Only for select observed hauls	Sex, length/frequency, CWT, adipose fin presence, genetic data.	WCGOP Salmon Report	Not available, but minor impacts
Nearshore	Not available until fall of following year	Only for select observed hauls	Sex, length/frequency, CWT, adipose fin presence, genetic data.	WCGOP Salmon Report	Not available, but minor impacts

Non-Whiting Sector Data Availability

Sub-Sector	Reporting Time	Location Information Available	Biological Information Available c/	Source	Model for Projection?
WA, OR, CA recreational bottomfish during open salmon seasons	Impacts are accounted for in pre-season salmon modeling and do not have to be attributed to non-whiting thresholds. See Table 2-53 from BiOP/ITS.				
WA recreational bottomfish outside salmon season	One month lag	By marine catch area.	Retention prohibited	WDFW Not on RecFIN	Not available, but minor impacts
OR rec. longleader (any month) and bottomfish outside salmon seasons	Preliminary 1 week lag, final 1 month lag	By broad grid of catch location.	Retention prohibited	ODFW Not on RecFIN	Not available, but minor impacts
California rec. bottomfish outside salmon season	Currently, no existing reporting structure to analyze salmon bycatch rec data outside of salmon season, but minor impacts.				

RPM 2: Developing Measures to Keep Bycatch within Guidelines

"The Council and NMFS will review existing regulatory mechanisms for reducing salmon bycatch and will revise these mechanisms or develop and implement new mechanisms to ensure that, should inseason data show the annual coastwide bycatch will exceed 11,000 Chinook or 474 coho for the whiting sector or 5,500 Chinook or 560 coho for the non-whiting sector, NMFS and the PFMC will take timely and effective inseason action to avoid an exceedance of these bycatch thresholds."

- T&C 2.a: review existing mechanisms for avoiding or reducing bycatch inseason through the 2019-2020 biennial harvest specifications and management measures process.
- T&C 2.b.: Potential management measures that may be needed to keep sectors from exceeding their bycatch guidelines

Considerations

- In November, the Council recommended that the GMT analyze the efficacy of:
  - Ocean Salmon Conservation Zone (OSCZ)
  - Bycatch Reduction Areas (BRAs), including the addition of a 200 fm line
- Primary emphasis of analysis is on Chinook salmon

Whiting Chinook Totals, 2002-2017

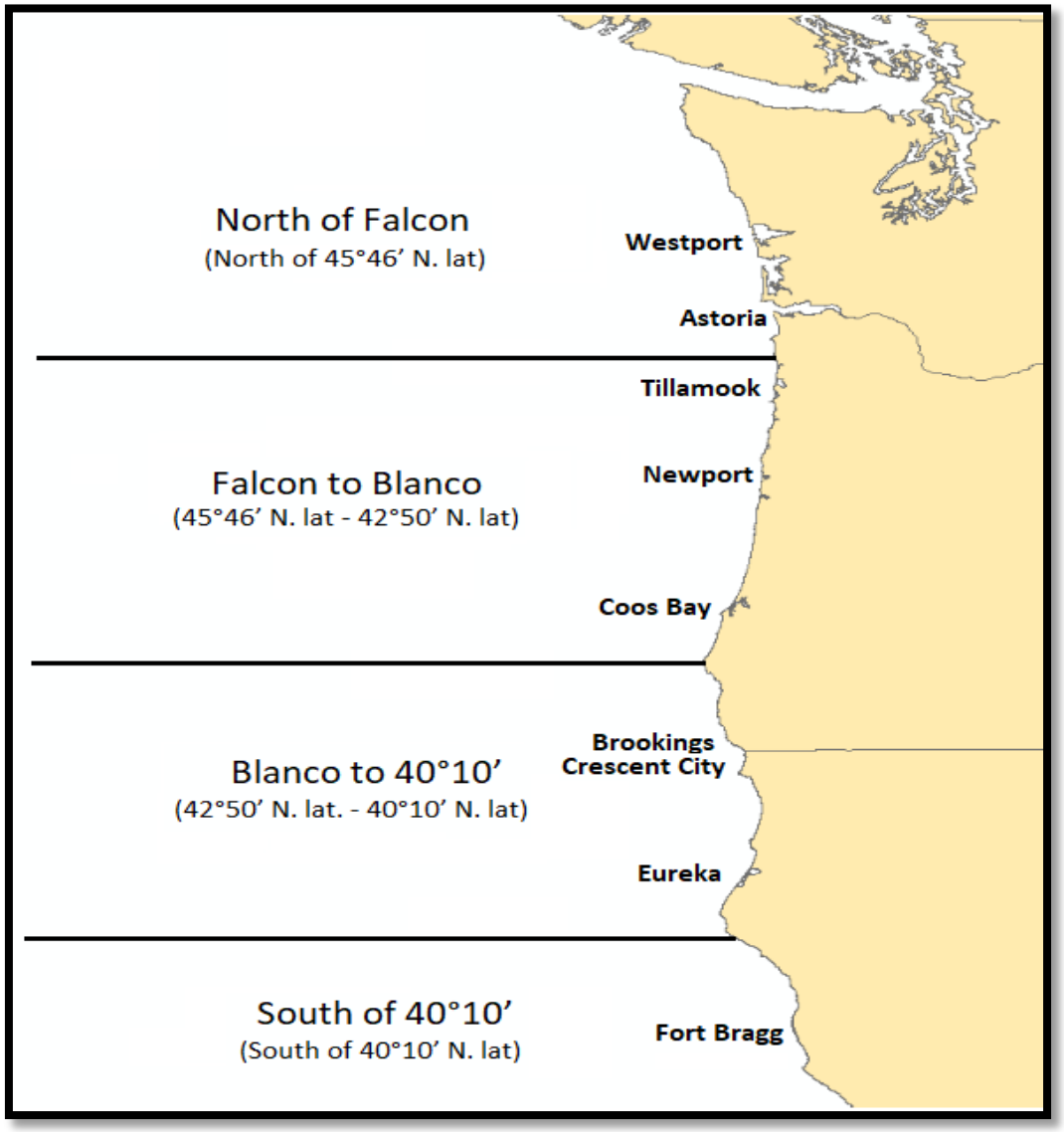
Sector	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
At-sea	1,679	2,648	805	3,963	1,209	1,321	722	319	714	3,990	4,232	3,737	6,685	1,808	3,051	3,769
Shoreside	1,062	425	4,206	4,018	839	2,462	1,962	378	2,997	3,727	2,333	1,313	7,554	2,424	733	1,394
Tribal	1,018	3,439	3,740	3,985	1,940	2,404	697	2,147	678	906	17	1,025	154	1	200	577
Total	3,759	6,512	8,751	11,966	3,988	6,187	3,381	2,844	4,389	8,623	6,582	6,075	14,393	4,233	3,984	5,740
% 11k threshold	34%	59%	80%	109%	36%	56%	31%	26%	40%	78%	60%	55%	131%	38%	36%	52%

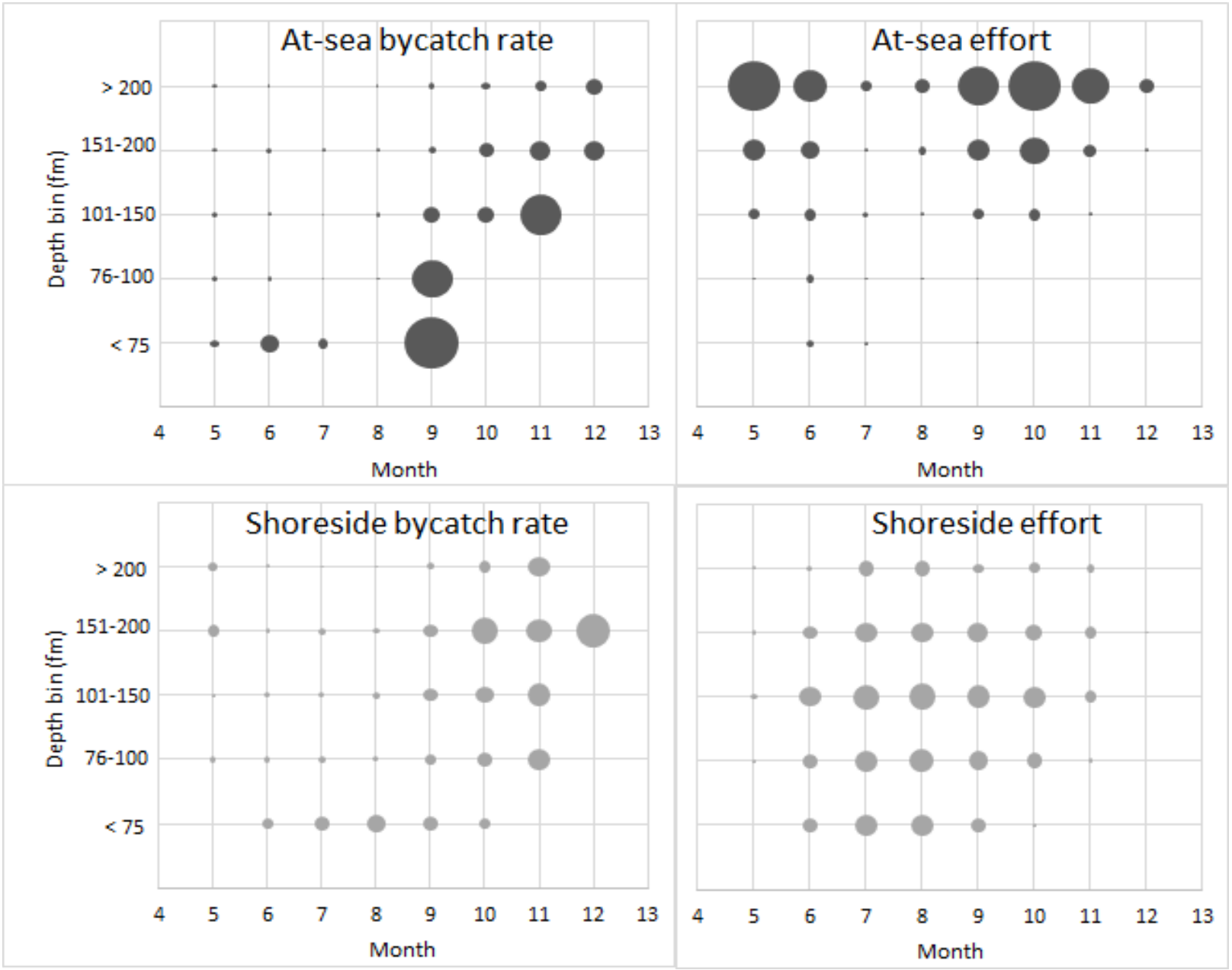
GMT Analysis

- Historical Chinook salmon bycatch and fishing effort data by depth, area, and month
  - At-Sea- 2011-2017
  - Shoreside- 2011-2016
- Caveats
  - Depth
    - At-Sea- Bottom depth
    - Shoreside- Fishing depth
  - Haul level information
    - At-Sea- Landings and discard available at haul-level
    - Shoreside- Maximized retention, trip level totals on fish tickets used with logbooks to approximate haul-level landings

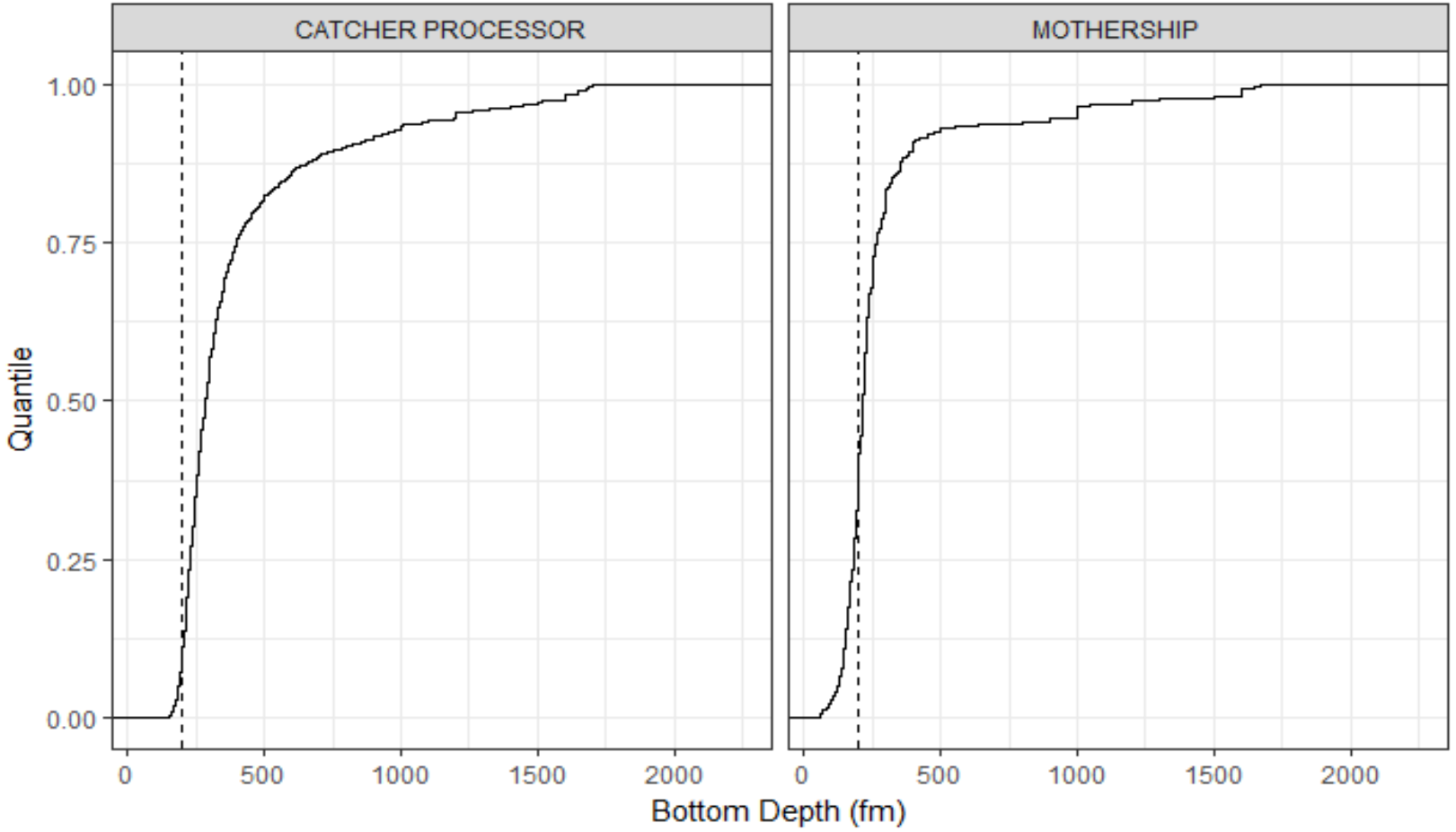
Area Stratifications

- BRAs available to be implemented at any latitudinal break in regulation
- 4 areas examined, but open for discussion




At-sea bycatch rate
At-sea effort
Shoreside bycatch rate
Shoreside effort
Depth bin (fm)
> 200
151-200
101-150
76-100
< 75
4 5 6 7 8 9 10 11 12 13
Month

At-Sea: Fishing Distribution



At-Sea: Heatmap of Chinook Bycatch

Depth Bin	Area Bin	May	June	July	August	Sept.	Oct.	Nov.	Dec.
0-75	N of Cape Falcon								
	Cape Falcon to Cape Blanco								
	Cape Blanco to 40 10 N. lat.								
76-100	N of Cape Falcon								
	Cape Falcon to Cape Blanco								
	Cape Blanco to 40 10 N. lat.								
101-150	N of Cape Falcon								
	Cape Falcon to Cape Blanco								
	Cape Blanco to 40 10 N. lat.								
151-200	N of Cape Falcon								
	Cape Falcon to Cape Blanco								
	Cape Blanco to 40 10 N. lat.								
>200	N of Cape Falcon								
	Cape Falcon to Cape Blanco								
	Cape Blanco to 40 10 N. lat.								

- The color gradient goes from dark green (lowest bycatch rate, including zero) to red (highest bycatch rate). Blank cells represent zero hauls in that bin.
- No fishing effort south of 40 10 N. lat.

At-Sea Conclusions

- OSCZ
  - Likely ineffective
  - Few hauls shallower than 100 fm later in the year (i.e. when threshold would be exceeded)
- BRAs
  - 200 fm may be effective
  - Sector-specific (CP vs. MS) may be preferable given differences in fishing location
- Significant intraannual and interannual variation
  - With darkblotched and POP rebuilding, may be able to move northerly

Shoreside: Heatmap of Chinook Bycatch

Depth (fm)	Area	May	June	Jul.	Aug.	Sept	Oct	Nov.	Dec.
0-75	1: N. Falcon								
0-75	2: Falcon - Blanco								
0-75	3: Blanco - 40.10								
76-100	1: N. Falcon								
76-100	2: Falcon - Blanco								
76-100	3: Blanco - 40.10								
101-150	1: N. Falcon								
101-150	2: Falcon - Blanco								
101-150	3: Blanco - 40.10								
151-200	1: N. Falcon								
151-200	2: Falcon - Blanco								
151-200	3: Blanco - 40.10								
>200	1: N. Falcon								
>200	2: Falcon - Blanco								
>200	3: Blanco - 40.10								

- The color gradient goes from dark green (lowest bycatch rate, including zero) to red (highest bycatch rate). Blank cells represent zero hauls in that bin.
- No fishing effort south of 40 10 N. lat.

Shoreside Conclusions

- OSCZ
  - Likely ineffective
  - Few hauls shallower than 100 fm later in the year (i.e. when threshold would be exceeded)
- BRAs
  - 200 fm may be effective
  - However, may be less than at-sea since bycatch rate does not decline as steeply with depth as for at-sea

Issue A: Whiting Sector Mitigation Measure Alternatives

(NOT MUTUALLY EXCLUSIVE)

OSCZ:

No Action: Automatic Action once the whiting sectors (including tribal) are projected to or reach the threshold of 11,000 Chinook salmon.

Alternative 1: Eliminate

BRAs:

No Action: Available through routine action at 75, 100, and 150 fathoms to minimize the incidental harvest of any protected or prohibited species taken in the groundfish fishery (this includes salmon)

Alternative 1: Maintain BRA lines at 75, 100, and 150 fathoms in regulation and add the 200 fm depth contour

Alternative 2: Maintain automatic action authority and revise regulations so that exceedance of the whiting salmon threshold of X would also trigger the automatic implementation of a BRA

Non-Whiting

- Comprised of the following fisheries:
  - Shorebased IFQ (bottom trawl, non-whiting midwater, fixed gear)
  - Nearshore and non-nearshore (LE and OA fixed gear)
  - Recreational

Fixed Gear and Recreational Fisheries

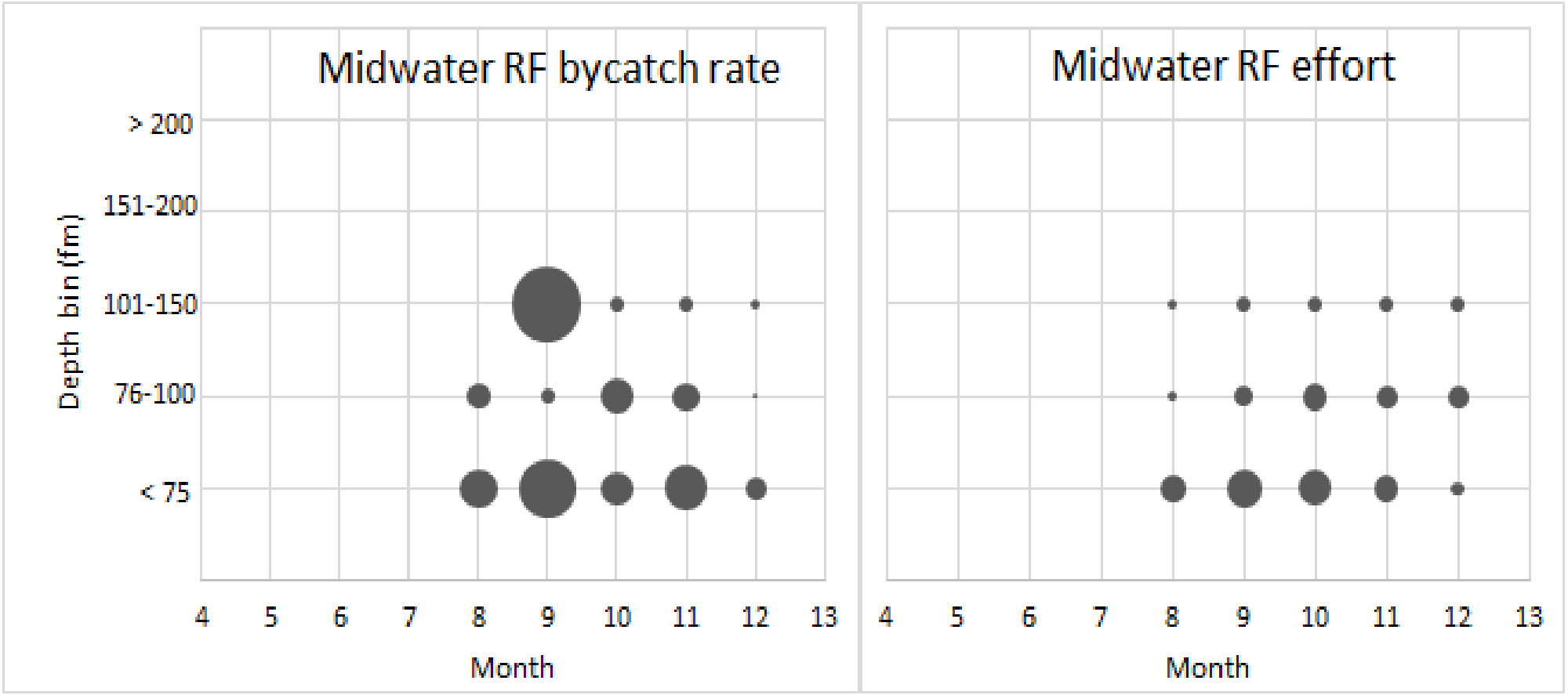
- Nearshore and Non-Nearshore
  - Partially observed by WCGOP- no inseason bycatch accounting
  - Average of 54 Chinook between 2011-2015, with high of 124
- Recreational impacts
  - During open salmon seasons, impacts accounted for during preseason modeling
  - Not accounted for in preseason modeling:
    - OR longleader
    - CA recreational skiff fishery
    - Any bottomfish activity outside open salmon season
- 250 Chinook buffer included in BiOp analysis for uncertainty

Non-Whiting Midwater Trawl

- Data available from 2011-2016, however doesn't account for recent increase in midwater rockfish fishery starting in 2017

Depth bin	May	June	July	August	Sept.	Oct.	Nov.	Dec.
0-75								
76-100								
101-150								
151-200								
>200								

- Insufficient data to look at area impacts, but 90% north of Cape Falcon



- 2017 trips have not yet been processed to link depth and catch.
- Based on < 50% whiting threshold
- Excludes hauls with < 1 mt rockfish since unable to tell if these were “failed” whiting or rockfish hauls

Bottom Trawl

- Catch highly variable, but under 1,000 per year since 2005

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
14,501	16,433	1,758	808	67	194	449	304	282	175	304	323	984	996	371

- Block Area Closures (BAC) being considered as a mitigation tool for species, including salmon, as apart of the EFH/RCA agenda item

Issue B: Reference Point for Tracking Non-Whiting Bycatch of Salmon

- Used to assess catch of the trawl sub-sectors (groundfish bottom and non-whiting midwater) inseason
- Not be established in regulation unless used for an automatic action.

No Action: No reference point for tracking inseason

Alternative 1: 5,096 (5,550 threshold - 404 analyzed in the BiOp that includes: 124 for nearshore/non-nearshore (maximum bycatch) -18 maximum for CA recreational bottomfish fisheries outside salmon season - 12 assumed maximum OR longleader - 250 buffer for uncertainty for commercial non-trawl and OR/WA recreational bottomfish outside salmon seasons)

Issue C: Salmon mitigation measures for non-whiting midwater trawl

No Action: Status Quo (BRAs available to minimize the incidental harvest of any protected or prohibited species taken in the groundfish fishery, including salmon)

Alternative 1: Make BRAs available at 200 fathoms for non-whiting midwater trawl available in regulation for routine inseason action (Council recommends implementation to NMFS at a Council meeting) for to minimize the incidental harvest of any protected or prohibited species taken in the groundfish fishery (including salmon)

Alternative 2: Make BRAs an automatic authority for non-whiting midwater trawl and revise regulations so that exceedance of the non-whiting salmon threshold of X Chinook salmon would trigger the automatic implementation of a BRA

Coho Salmon

- RPM 2 does refer to reviewing and developing mechanisms for exceeding coho salmon thresholds of 474 for whiting and 560 for non-whiting (historical maximums)
  - Non-whiting includes 250 coho buffer
- Unlike Chinook, exceedance of a coho only results in reconsultation (not closure)
- Extremely volatile catch in both sectors, making depth and spatial analysis of management measures difficult

RPM 3: The Reserve

Requires NMFS and the Council to “develop and implement regulations regarding the Reserve and its use, ensuring that the Reserve will be available only to address unexpected high bycatch levels, and it will not be available as a matter of course to allow the sectors to exceed their bycatch guidelines”

RPM 3: The Reserve- T&C 3 (a)

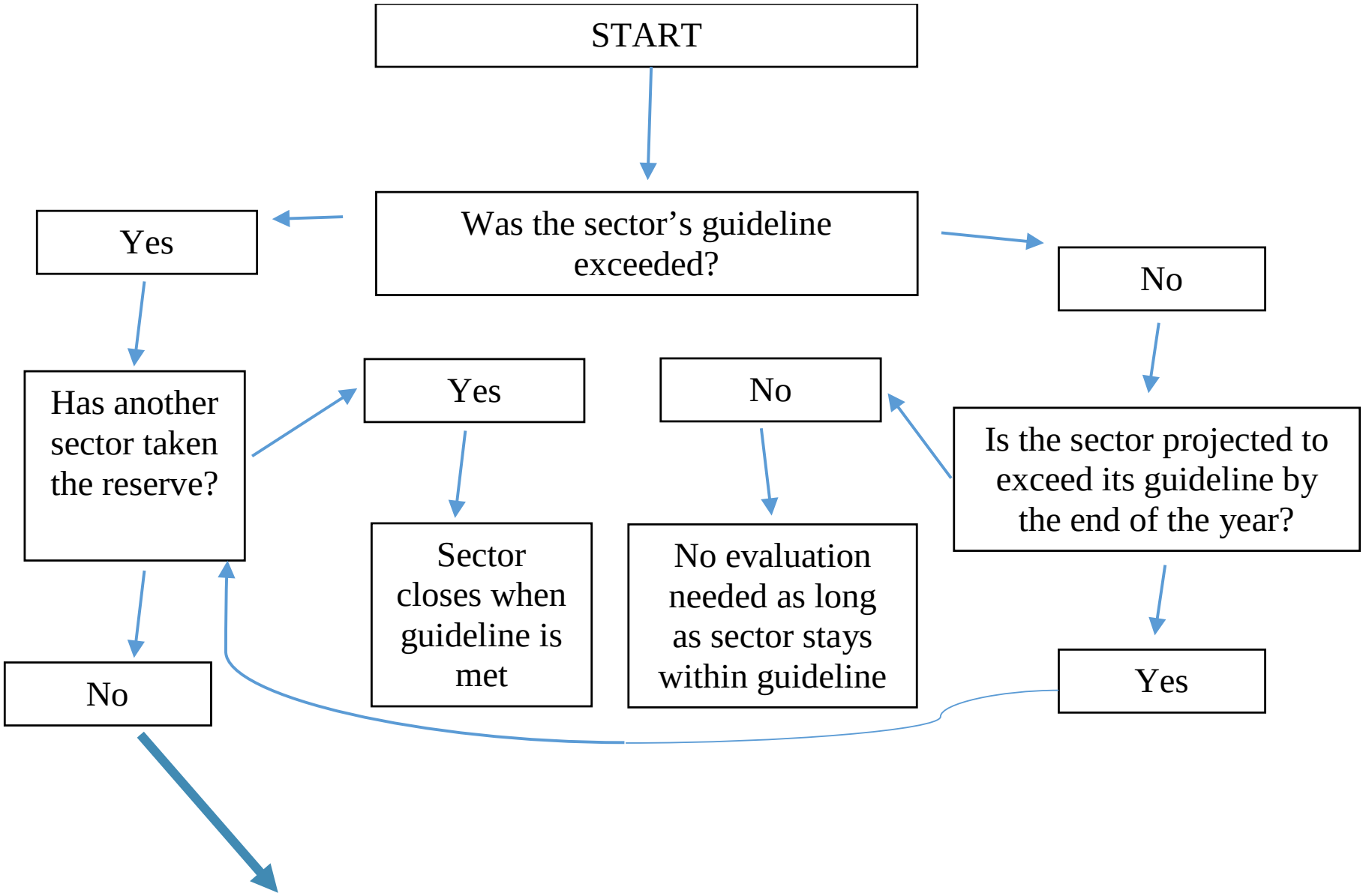
The Council and NMFS shall develop and implement initial regulations governing the Reserve of 3,500 Chinook salmon as part of the 2019-2020 biennial specifications and management measures. These regulations will be designed to, among other things, allow for inseason action to prevent any exceedance of a sector guideline plus the full amount of the Reserve and minimize the chance that the Reserve is used in three out of any consecutive five years.

RPM 3: The Reserve- T&C 3 (c)

If, at any time during the fishery, it is anticipated that the coastwide bycatch will exceed the annual Chinook salmon bycatch guideline of 11,000 for the whiting sector or 5,500 for the non-whiting sector, NMFS and the Council will take action to avoid an exceedance of either guideline. If either sector exceeds its guideline plus the Reserve, fisheries for that sector will close for the remainder of the year. If a sector exceeds its guideline plus the Reserve, but the other sector has not exceeded its guideline, only the sector that has exceeded its guideline plus the Reserve will be closed. If one sector has been closed for the remainder of the year under the above scenario, and the other sector reaches its guideline, all sectors would be closed for the remainder of the year. NMFS and the Council shall develop and implement regulations governing closure of the fishery sector(s) as described here as part of the biennial harvest specifications and management measures for 2019-2020.

Reserve Considerations

- NOT a buffer; use annually in 3 of 5 years will trigger re-initiation
- Some consideration should be given to whether access to the Reserve is needed
  - Timing of the need:
    I. there could be a disruption to the sector by closing the sector early in the season if they reach their threshold, or
    II. a sector may have already taken most of their allocation and therefore access to the Reserve may not be needed
  - Which actions were previously taken to address salmon take and the degree to which these actions were sufficient to reduce the rate of salmon bycatch for that sector
- Note that if a sector were to exceed a threshold between Council meetings, and there was no previous discussion or direction at the prior meeting, the sector would be allowed to continue fishing as normal unless a mitigation measure was available in regulation (e.g. BRA)


START
Was the sector's guideline exceeded?
Yes
No
Has another sector taken the reserve?
Yes
No
Is the sector projected to exceed its guideline by the end of the year?
Sector closes when guideline is met
No evaluation needed as long as sector stays within guideline
No
Yes

Questions for Consideration during inseason:

1. Has the sector taken other actions to reduce salmon take? If so, what were these actions and what has been the result?
2. Is salmon avoidance affecting attainment of the target species allocation?
3. Could the sector needs be addressed in a different way (i.e., moving to different areas, more access to overfish species) without more salmon take?
4. Are there additional mitigation actions that could reduce salmon take?
5. Would inaction that results in continued salmon catches result in re-consultation? (i.e. would the fishery exceed both guidelines and the reserve?)
6. Has the reserve been accessed in the past 5 years? If so, how often and by whom?
7. How much additional take of salmon is projected to occur over the remainder of the year in order for the sector to attain as much of their quota as possible?
8. Is there additional salmon take likely to occur in other sectors of the fishery?

Council and NMFS decide to stop the sector from fishing when the guideline is reached

Council and NMFS decide to allow fishing to go forward with additional salmon mitigation (i.e. depth based management)

Routine Inseason Process

- Only times when automatic action is required per the ITS are (1) if a sector exceeds or is projected to exceed their threshold plus the reserve, or (2) if one sector has already taken their threshold plus the reserve and the other sector exceeds or is projected to exceed their threshold.
- Beyond those two instances, NMFS and the Council would have the ability at a Council meeting to discuss questions, such as those in the “questions for consideration” box, and make an informed decision based on the best available science to either allow fishing to continue or to close a sector when they exceed or are projected to exceed their threshold.

Risk of Exceeding Thresholds

- However, there is some risk with this approach if one sector could exceed their threshold between Council meetings.
- Table 6 on Pages 24-25
  - Periods during the year (shaded in grey) that the Council would not have the ability to react inseason at a Council meeting to a sector exceeding a salmon bycatch threshold.
  - Likely September, October, or November is when action would be needed

Issue 5: Automatic Action for Salmon Bycatch Thresholds and the Reserve

No Action: No automatic authorities around the salmon thresholds will be implemented in regulation

Alternative 1: Include two automatic authorities in regulations that would

- close either sector (whiting or non-whiting) upon that sector having exceeded or being projected to exceed its salmon bycatch threshold and the reserve amount of 3,500, and
- close a sector (whiting or non-whiting) when one sector has been closed after exceeding or being projected to exceed its salmon bycatch threshold and the reserve amount of 3,500, and the second sector exceeds or is projected to exceed its salmon bycatch threshold.