GROUNDFISH MANAGEMENT TEAM REPORT ON BIENNIAL MANAGEMENT MEASURES FOR 2019-2020

At our October work session, the Groundfish Management Team (GMT) spent the majority of our time discussing the list of management measures forwarded at the September Council meeting. Based on that discussion, this report provides some background information, the GMT's first cut at what factors would be relevant to the analysis, and an estimate of the anticipated workload for analyzing those management measures. The anticipated workload is ranked qualitatively from low to high, rather than a direct estimate of the time needed to complete the analysis. The workload rankings (low, medium, high) are our initial assessment of the workload required to conduct the analysis and are intended to inform the Council as they consider the analysis relative to the goal of a January 1, 2019 implementation date. Items are numbered and referenced in the Action Item Checklist under this agenda item.

Contents

Overarching

1. Mid-biennial Harvest Specification Adjustments ("Green Light")

The Council is set to take final action on this item under Agenda Item F.5, at this meeting. Pending the outcome of that decision, the GMT will provide comments on the analysis and workload considerations in Agenda Item F.9.a, Supplemental GMT Report 2.

2. Carryover, Including Shorebased Individual Fishing Quota Carryover and At-Sea Carryover

Background

The revised National Standard 1 (NS1) Guidelines allow for consideration for two new carryover provisions. Approach 1 would move unharvested allocation from year one to year two up to the acceptable biological catch (ABC) level in year two, when the annual catch limit (ACL) is less than the ABC. Approach 2 would recalculate the ABC and overfishing level (OFL) for year two based on unharvested surplus, for stocks when the ABC = ACL. In September, the GMT developed a purpose and need statement for the action and provided examples for the Council's consideration (Agenda Item E.5.a, Supplemental GMT Report 1, September 2017).

At the September Meeting, the Council also forwarded two additional alternatives to consider in conjunction with this item. The first would change the percent of quota that could be carried over to shorebased individual fishing quota (IFQ) vessel accounts from 10 percent to up to 100 percent. This would only apply to those species where ACL is set less than ABC.

The second alternative would allow for the carryover of at-sea set- asides. In this latter alternative, unused set-asides from year one would be moved to year two and then would be "topped off" with additional new quota to the level of the established set-aside amount. In short, any unutilized set-asides from the at-sea sector in year one would mean less would have to be deducted from the trawl allocation in year two and thus made available to the IFQ sector.

For example, the yellowtail rockfish residual for the at-sea sectors was 238 mt in 2016 (62 mt of their 300 mt set-aside was taken). Under this proposal, this 238 mt residual could be carried over for the at-sea sector set-aside in 2017. This would mean that beginning in 2018, the at-sea sector would already have a 238 mt set-aside for yellowtail rockfish and only 63 mt would be needed to be deducted from the trawl allocation in order to meet the 300 mt set-aside goal for the at-sea sectors. This would thereby increase the IFQ allocation by 238 mt.

Relevant Factors For Analysis

Within this item, the GMT has identified separate timelines for all three components, each with its own level of analysis.

All Sector Carryover

After further consideration, the GMT recommends that this item not be considered as a part of the 2019-2020 biennial harvest specifications and management measures process; **however, we do recommend considering this action for implementation in a separate process.** Since this process would first be used in 2020, and there is additional work needed to develop the policy, the GMT believes it would be better facilitated outside of the 2019-2020 biennial process. There has been no Council action on the selection of a final preferred alternative and therefore, any analysis

would likely not be completed until the spring. This does not align with the analysis schedule adopted by the Council in June 2016.

Increasing Shorebased IFQ Program Carryover
The GMT recommends this item be included in the 2019-2020 biennial harvest specifications cycle. The evaluation of the percentage of quota pounds that could be carried over would be based on the risk to the ACL and the ABC, but would be similar to the framework already established.

At-sea Carryover
The GMT believes that the issue of stranding yield in the at-sea sectors would be better addressed by re-examining the current set-aside amounts and process, and **recommends this item not be moved forward as part of the 2019-2020 biennial process or any follow on action.** Furthermore, the GMT believes there may be greater benefits in prioritizing work on the all sector carryover provisions.

Workload:
All Sector Carryover- High
IFQ Carryover- Low
At-Sea Carryover- Low

3. Multi-year Average Catch Policy

A. Multi-Year Approach to Determining Overfishing Status

Background

Under the current regulations, the overfishing determination for a stock, or stock complex, is determined based on data for a period of one year. Because of this limited information, there may be situations where there is high uncertainty in stock abundance due to natural fluctuations. Additionally assessments are not timely enough to forecast such changes, or other circumstances where the most recent year's catch relative to the OFL does not reflect the overall status of the stocks or stock complexes. Under the new NS1 guidelines, in these situations, a multi-year approach (of no more than three years) may be used to determine overfishing status. In essence, this provision would provide the Council and National Marine Fisheries Service (NMFS) a pathway for retrospectively determining if a stock was truly undergoing overfishing and potentially changing the overfishing status determination.

Relevant Factors For Analysis

The GMT does not believe there is a high analytical workload for implementing this provision. However, it would require a Fishery Management Plan (FMP) and regulatory amendment to change the definition of overfishing from annual mortality compared to one year versus a three-year period.

Workload: Low

B) Accountability Measure Adjustment Based on Multi-Year Catch Data

Every biennium, the Council sets ACLs and develops management or accountability measures (AMs) designed to keep stocks or stock complexes within their specified ACLs. However, unforeseen circumstances may arise that result in a fishery exceeding the ACL, despite taking inseason action. If an ACL were exceeded, the GMT could use this policy to assess the final catch

data early in the following year, and determine what adjustments to AMs, if any, are needed to keep the ACL from being exceeded in the subsequent year.

Overall, the GMT believes that this provision will be used infrequently as our pre-season measures and ability to take routine inseason actions are designed to keep catch at or below ACLs. Furthermore, our current management measures take into account a wide range of data, depending on the fishery, to best predict what management measure action is needed.

The GMT notes that at our October meeting, NMFS General Counsel indicated that they would be reaching out to the National Technical working group on the potential to use to this provision to reduce the level of inseason adjustments needed when the ACL is projected to be exceeded (e.g., area closures instead of fishery closures).

Relevant Factors For Analysis

The GMT does not believe there is a large amount of workload associated with implementing this item with respect to assessing AMs after an ACL is exceeded. We currently have the flexibility to take into account multiple years of data when setting management measures and assessing if the previous year was truly representative of the future conditions, and therefore this may provide little benefit once implemented.

Regarding the use of AMs inseason, the GMT will wait to hear from NMFS General Counsel on the potential to use this provision inseason and can provide comment on additional relevant factors for analysis.

Workload: Low

4. Establishing and Accessing ACL Buffers

Background

As described in Agenda Item F.6., GMT Report 1, the GMT recommends the Council consider establishing a buffer for yelloweye rockfish for the 2019-2020 biennial cycle. In addition, based on the Council's decision under Item #18 below (i.e., using Amendment 21 formula to establish set-asides for Pacific Ocean Perch (POP) and darkblotched rockfish), the Council may also want to consider establishing a buffer for darkblotched rockfish. The GMT will provide details on these buffers in Agenda Item F.9.a, Supplemental GMT Report 2, once the Council has made its decisions on harvest specifications and exempted fishing permits, and we receive input from the Groundfish Advisory Subpanel (GAP).

Relevant Factors for Analysis

The GMT believes that there is a low analytical workload in analyzing the impacts of establishing criteria for creation and release of the buffer, but notes that there will be a high workload in terms of Council discussion, advisory body time, and NMFS rule-making if and when the buffer is released inseason.

Workload: low (now), high (inseason)

5. Modifications or Removal of Lingcod Size Limits

Background

During discussions about sablefish and lingcod discard survival credits for the IFQ fisheries in June 2017 (item #14 below) , the Council requested an analysis of how revision or removal of the lingcod size limits may affect all groundfish fishing sectors (PFMC Decision Summary, June 2017).

Minimum lingcod length limits have been in place since the late 1990s, and were implemented to minimize harvest of immature lingcod, while maintaining the reproductive potential of the stock. Since the length at 50 percent maturity of female lingcod is about 23-25 inches (59-64 cm; Haltuch et al. 2017), length restrictions established near these lengths may allow fish to spawn at least once prior to harvest thereby boosting stock productivity The minimum lingcod length limit in the shorebased IFQ fishery and the limited entry (LE) and open access (OA) fixed gear fisheries vary north and south of 42° N. lat. and are 22 and 24 inches, respectively. Recreational lingcod length limits vary by state and region. In Washington, there is no lingcod size limit whereas the limit is 22 inches in Oregon and California.

IFQ lingcod discards have been ~20-40 mt per year, with ~90 percent of the discarded fish (in terms of numbers) being undersized and about half of those are less than 18 inches (Agenda Item F.3.a, Supplemental GMT Report, June 2017). It would be prudent for the GAP to provide input regarding items #5 (lingcod minimum size) and #14 (lingcod discard mortality rates, or DMR) together, since the two are connected and one may be preferable to the other. For example, if there are limited markets for undersized lingcod, these fish will continue to be discarded, so it could be preferable to have "survival credits" (i.e., lesser DMRs). However, if there is a market for undersized lingcod, then it could be preferable to remove, or reduce, the minimum size limit.

Note that in June 2012, the Council recommended maintaining the lingcod minimum size limit in the shorebased IFQ fishery in response to concerns expressed by the Council's Enforcement Consultants (EC) about differential length limits between sectors (Agenda Item D.5.b, Supplemental EC Report).

Relevant Factors For Analysis

To address EC's concerns about having consistent lingcod size limits across sectors, the Council requested additional analysis for removing and reducing the minimum lingcod length limits for all sectors (commercial and recreational).

Reducing or eliminating the lingcod size limit was therefore scoped in the 2013-2014 harvest specifications Final Environmental Impact Statement (FEIS; Appendix C, page C-58) for all the groundfish fisheries. The GMT reviewed the 2013-2014 analyses and believes they provide a sufficient platform for further consideration of removal of minimum size limits. While the analyses are several years old, the main topics of the analyses (i.e., selectivity, natural mortality, and desirability of undersize fish) remain the same as earlier.

Additionally, the Council should consider the removal of lingcod size limits and lingcod discard mortality rates in the context of the potential removal of gear restrictions, including the minimum mesh size requirement, and how that might also impact smaller lingcod.

Workload: Medium, depending on scope to just IFQ, all commercial fisheries, or recreational and commercial fisheries.

6. USFWS ESA Mitigation Measures

The Council is scheduled to receive an update on the United States Fish and Wildlife Service (USFWS) Endangered Species Act (ESA) consultation pertaining to the federally endangered short-tailed albatross and California least tern; and the Federally threatened marbled murrelet, southern sea otter, and bull trout and their designated critical habitat under Agenda Item F.7, at this meeting. The GMT will comment on mitigation measures at that time, or in Agenda Item F.9.a, Supplemental GMT Report 2.

7. Increase Access to Yelloweye Rockfish ACL for All Sectors

While this was noted as a standalone management measure in Agenda Item E.9.a, Supplemental GMT Report 1, September 2017, the GMT believes that this idea has been incorporated throughout various other management measures. For example, the consideration of a buffer for management uncertainty and assessing the estimated set-asides needed for research. Therefore, it does not need to be considered as a standalone item at this time.

8. Oregon Nearshore Complexes

Background

As mentioned in Agenda Item F.6.a, GMT Report 1, November 2017, there are two proposals for Oregon nearshore complex alternatives.

In Proposal 1 (Table 1), Oregon blue/deacon rockfish (BDR) could continue to be managed within the Nearshore Rockfish complex north of 40°10' N. lat. (status quo), be paired with Oregon black rockfish to form a new Oregon black/BDR Complex (Alternative 1), or be managed on their own as a new Oregon BDR complex (Alternative 2).

In Proposal 2 (Table 2), Oregon kelp greenling could continue to be managed within the Other Fish Complex (status quo) or be taken out of the Other Fish Complex and be grouped with Oregon cabezon to form a new Oregon cabezon/kelp greenling Complex (Alternative 1).

Table 1 . Alternative stock or stock complex harvest specifications for Oregon black rockfish (RF), Oregon blue/Deacon (BDR), and the Nearshore RF North of 40°10' N. lat. complex.

Alternative	Stock or Stock Complex	2019			2020		
		OFL	ABC	ACL	OFL	ABC	ACL
Status Quo	Black RF (OR)	565.0	515.8	515.8	561.0	512.2	512.2
	Nearshore RF North Complex	203.2	182.9	182.9	200.4	180.5	180.5
Alternative 1	Black RF/BDR (OR) Complex	677.3	617.4	617.4	669.8	610.5	610.5
	Nearshore RF North Complex	90.9	81.4	81.4	91.6	82.1	82.1
Alternative 2	BDR (OR) Complex	112.3	101.5	101.5	108.8	98.4	98.4
	Black RF (OR)	565.0	515.8	515.8	561.0	512.2	512.2
	Nearshore RF North Complex	90.9	81.4	81.4	91.6	82.1	82.1

Table 2. Alternative stock or stock complex harvest specifications for Oregon cabezon, Oregon kelp greenling, and the Other Fish Complex.

	Stock or Stock Complex	2019			2020		
		OFL	ABC	ACL	OFL	ABC	ACL
Status Quo	Cabezon (OR)	49.0	46.8	46.8	49.0	46.8	46.8
	Other Fish Complex	479.5	420.2	420.2	465.0	406.4	406.4
	--Kelp Greenling (OR) a/	*180.9*	*171.1*	*171.1*	*166.5*	*157.5*	*157.5*
Alternative 1	Cabezon/Kelp Greenling (OR) Complex	229.9	218.0	218.0	215.5	204.4	204.4
	Other Fish Complex	298.6	249.0	249.0	298.5	248.9	248.9

a/ Values indicate contributions to the Other Fish complex.

The broader rationale for the proposals include: (1) better grouping stocks to meet the NS1 and FMP (Section 4.7.3) criteria for stock complexes; (2) reducing management complexity; and (3) providing for greater management flexibility (Agenda Item E.9.a, Supplemental ODFW Report 1, September 2017).

For example, blue and deacon rockfishes are much more similar to black rockfish in appearance, geographic distribution (i.e., co-occur mixed semi-pelagic schools), life history, and fishery vulnerability (i.e., caught together since they live together) than with solitary and benthic stocks within the Nearshore Rockfish complex north of 40° 10' N lat. Stocks with which they are currently managed (e.g., China, copper, and quillback rockfishes). Also of note, the Oregon BDR complex ACL contribution of ~100 mt is more than 10 times higher than most other contributors (Table 3). These factors warrant consideration of management approaches other than continuing to

include blue and deacon rockfish in the Nearshore Rockfish complex north of 40° 10' N lat. beginning in 2019.

The same rationale applies for lumping kelp greenling with cabezon since they share greater similarity (e.g., both solitary nearshore stocks that are encountered together) than with leopard sharks, with kelp greenling currently lumped in the Other Fish complex.

Relevant Factors For Analysis

Since the Oregon Department of Fish and Wildlife (ODFW) stated they would set their sector-specific state harvest guidelines (HGs) at the ACL contributions for each contributor to a complex (Agenda Item E.9.a, Supplemental ODFW Report 1, September 2017), the GMT conducted a precursory analysis to determine if either of the proposals would cause risk to the ACLs, or cause detriment to the other states given that all share the ACLs for Nearshore Rockfish complex north of 40°10' N. lat. and Other Fish complexes.

The GMT does not see any adverse effects with the Proposal 1 action alternatives (1 and 2) that remove Oregon blue/deacon rockfish from the Nearshore Rockfish complex north of 40°10' N. lat. As seen in Table 3 below, Washington and California would receive the same state HGs for all three alternatives if the Council elects to use the same sharing arrangement as used for 2017-2018 (i.e., if a state-specific ACL, then state keeps that full ACL contribution based on the sharing arrangement for 2015-2016). Furthermore, there does not appear to be any biological concerns, as recent removals in 2015-2016 (after the state sharing arrangements first formally took place) are only about a third of the 2019-2020 ACLs for the Proposal 1, alternatives 1 and 2 that remove Oregon BDR from the complex (Table 4).

Table 3. State HGs for the Nearshore Rockfish complex north of 40°10' N. lat. complex for each proposal 1 alternative assuming the same sharing arrangement from 2017-2018 is used for 2019-2020.

Stock	Sharing Arrangement			2019				2020			
	WA%	OR%	CA%	ACL	WA	OR	CA	ACL	WA	OR	CA
Black and yellow	13%	59%	29%	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
BDR (CA)	0%	0%	100%	28.1	0.0	0.0	28.1	29.3	0.0	0.0	29.3
BDR (OR)	0%	100%	0%	101.5	0.0	101.5	0.0	98.4	0.0	98.4	0.0
BDR (WA)	100%	0%	0%	7.3	7.3	0.0	0.0	7.0	7.0	0.0	0.0
Brown	0%	8%	92%	1.9	0.0	0.2	1.7	1.9	0.0	0.2	1.8
Calico	NA	NA	NA	-	0.0	0.0	0.0	-	0.0	0.0	0.0
China	32%	55%	13%	26.1	8.4	14.4	3.4	25.5	8.2	14.0	3.3
Copper	26%	49%	25%	10.9	2.8	5.3	2.7	11.2	2.9	5.5	2.8
Gopher	13%	59%	29%	-	0.0	0.0	0.0	-	0.0	0.0	0.0
Grass	13%	59%	29%	0.5	0.1	0.3	0.2	0.5	0.1	0.3	0.2
Kelp	NA	NA	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Olive	13%	59%	29%	0.3	0.0	0.2	0.1	0.3	0.0	0.2	0.1
Quillback	13%	59%	29%	6.2	0.8	3.6	1.8	6.2	0.8	3.6	1.8
Treefish	13%	59%	29%	0.2	0.0	0.1	0.1	0.2	0.0	0.1	0.1
Total SQ				**182.9**	**19.4**	**125.6**	**38.0**	**180.5**	**19.0**	**122.2**	**39.3**
Total Alt 1 or 2				**81.4**	**19.4**	**24.1**	**38.0**	**82.1**	**19.0**	**23.9**	**39.3**

The GMT also does not see any adverse effects with the Proposal 2 alternative 1 that would remove Oregon kelp greenling from the Other Fish complex. That is because recent 2015-2016 removals from Other Fish complex (Table 5) have only been approximately a quarter of the 2019-2020 ACLs that would exist if Oregon kelp greenling remains in the complex (Status Quo Alternative) or a fifth to a third without (2015-2016, respectively; Alternative 1)

Table 4. Comparison of recent attainments (2015-2016; white shading) of the Nearshore Rockfish complex north of 40°10' N. lat. to the 2019-2020 ACLs (light grey shading) and default state HGs (dark grey shading) for the proposal 1 alternatives 1 and 2 that would remove Oregon blue/deacon from the complex. Note that Oregon removals exclude blue/deacon.

	Recent Removals (mt)				Comparison of total removals to ACLS			
Year	CA	WA	OR	Total	2019 ACL	2020 ACL	2019 %	2020 %
2015	16.1	4.8	9.2	30.1	81.4	82.1	37%	37%
2016	15.7	7.3	6.4	29.4	81.4	82.1	36%	36%
Average	15.9	6.1	7.8	29.8	81.4	82.1	37%	36%
2019 HG	38.0	19.4	24.1	---				
2020 HG	39.3	19.0	23.9	---				
% of 2019 HG	42%	31%	33%	---				
% of 2020 HG	40%	32%	33%	---				

Table 5. Comparison of recent removals of the Other Fish complex to the ACL totals if Oregon kelp greenling were kept in the complex (status quo) or removed (alternative 1).

Other Fish Species	Removals (mt)		ACL Contributions (mt)	
	2015	2016	2019	2020
WA cabezon	4.7	5.2	4.6	4.5
CA kelp greenling	23.8	15.6	99.2	99.2
OR kelp greenling	31.7	11.2	171.1	157.5
WA kelp greenling	1.3	1.9	5.9	5.9
Leopard shark	22.1	69.2	139.4	139.4
Total w/ OR kelp greenling (SQ)	83.4	100.0	420.2	406.4
Total w/o OR kelp greenling (Alt 1)	51.7	88.8	249.0	248.9

The GMT does not expect further consideration of the Oregon nearshore complex alternatives to entail much additional work for the GMT since the impacts analysis to the ACLs, and to the other

states, have already been completed above. Note that none of these stocks are formally allocated in the FMP, which should result in a relatively simple process for change.

Workload: Low-Medium

9. Modify Two-year Trawl/Non-trawl Allocation

Background

In September, the California Department of Fish and Wildlife (CDFW) recommended consideration to modify the two-year trawl and non-trawl allocation for cowcod (Agenda Item E.9.a, Supplemental CDFW Report 1, September 2017). The GMT notes that each biennium, the Council can also modify the trawl/non-trawl allocations for bocaccio south of 40°10' N. lat., yelloweye rockfish, canary rockfish, Shelf Rockfish complex north and south of 40°10' N. lat., big skate, and longnose skate. As such, the GMT broadens the scope of this measure for Council consideration.

Relevant Factors For Analysis

The GMT will provide the historical mortality by trawl and non-trawl sectors from 2011-2016 for each species and considerations for allocation options in a supplemental report to help inform the Council decision.

Workload: Dependent on species and range of allocation options

10. Non-salmon ESA Mitigation Measures

The NMFS informed the GMT that the consultations for eulachon and humpback whales are in progress; however, the results will not be available to inform the development of the 2019-2020 regulations. NMFS will alert the Council when the consultations have been completed and the timing of any follow on actions, if necessary, can be discussed at that time.

11. Modify the Outer Boundary of the Western Cowcod Conservation Area

Background

Cowcod was declared overfished in 2000. In 2001, as a management measure to reduce catch, Cowcod Conservation Areas (CCA) were implemented in the Southern California Bight where cowcod are abundant and catches were highest. The Western CCA closed an area of 4,200 square miles. Though currently non-trawl commercial and recreational fishing, for select species, is allowed shoreward of 20 fathoms; there is no fishing allowed in deeper depths. The 2013 stock assessment provided a more optimistic status of the stock than previously thought, and the 2017 catch report indicated that the stock is projected to be rebuilt in 2019 under all catch levels previously analyzed.

Modifying the outer boundary of the Western CCA, would apply to both the commercial and recreational fisheries, and would continue to reduce cowcod impacts while providing increased access to historically important deep-water species. While the change applies to both sectors, it is anticipated that only the commercial fishery will operate in these deeper waters, providing greater access to sablefish and thornyheads.

Relevant Factors For Analysis
The GMT will need to evaluate the impacts including those to habitat and target and non-target stocks, including cowcod.

Workload: High

12. Modification/ Corrections to Waypoints of Existing RCA Lines in California

Background:
Changes to Rockfish Conservation Areas (RCA) boundary line way points to correct omissions and/or modify RCA lines to more closely approximate depth contours will be explored by the CDFW. There have been multiple places where the coordinates could be re-specified to better approximate the specified RCA depth line to more closely align with the intended depth contour. CDFW staff will work with Law Enforcement officers to provide corrections, if these corrections are necessary.

Relevant Factors for Analysis:
Typically, all three states consider proposed RCA boundary corrections as needed; however, none have been identified at this time for Washington or Oregon. If other coordinates are identified which better approximate the relevant depths during the overwinter analysis, those will be brought forward in March or April. Analyses by GIS will be conducted to determine if the existing RCA waypoints reasonably approximate the correct depth contour.

Workload: Medium, unless proposed changes open up new areas that haven't been open previously.

Trawl Sectors

13. ESA Salmon Mitigation Measures

The Council is scheduled to receive an update on the ESA salmon consultation under Agenda Item F.7. The GMT will comment on mitigation measures at that time or in Agenda Item F.9.a, Supplemental GMT Report 2.

14. Lingcod and Sablefish Discard Mortality Rates Applied to IFQ QP

Background
As part of the Omnibus process, the Council recommended consideration of "survival credits" for IFQ discards of lingcod and sablefish. Currently, the DMRs used by the West Coast Groundfish Observer Program (WCGOP) for estimates of total mortality are less than the 100 percent debited to IFQ (Table 6).

Table 6. Discard mortality rates of sablefish and lingcod that are used by WCGOP for mortality estimates in management.

Species	Gear	WCGOP DMR	IFQ DMR
Lingcod	Bottom Trawl	50%	100%
	Fixed Gear	7%[a]	100%
Sablefish	Bottom Trawl	50%	100%
	Fixed Gear	20%[b]	100%

[a] Only for hook and line gear

[b] Applies to both pot and hook and line gear

Since there was poor documentation of the DMRs used by WCGOP, the GMT first verified that the rates were still relevant prior to Council consideration of applying the rates to IFQ accounts. The GMT determined the DMRs used by WCGOP were appropriate (Agenda Item F.3.a, GMT Report 1, June 2017), and they were endorsed by the Scientific and Statistical Committee (SSC; Agenda Item F.3.a, Supplemental SSC Report, June 2017).

With the SSC endorsement, the Council can consider applying the WCGOP DMRs to the IFQ fishery. Our supplemental report from June (Agenda Item F.3.a, Supplemental GMT Report, June 2017) described policy trade-offs (i.e., greater discarding vs higher yields), expected benefits (i.e., greater landings of co-occurring stocks, such as Dover sole and thornyheads for trawl), and conservation issues.

Relevant Factors For Analysis

Most of the analysis for consideration of IFQ survival credits for sablefish and lingcod has already been completed (Agenda Item F.3.a, GMT Report 1, June 2017; Agenda Item F.3.a, Supplemental GMT Report, June 2017). However, the GMT could provide greater detail in regards to potential economic benefits and/or conservation concerns (e.g., implications to stock productivity). Additionally, the GMT notes that under the gear regulation package, if the minimum mesh size limit is removed, there is the potential for an increase in small lingcod in the nets. These smaller fish may not have the same survival rate.

Workload: Low-Medium

15. Shorebased IFQ QP Daily Vessel Limits

Background

The Council implemented daily quota pound (QP) limits to encourage the market availability of quota pounds for potentially restrictive species. The catch share program five-year review identified consistently low utilization rates for many groundfish species, including those managed with daily limits. In September 2017, the Community Advisory Board (CAB) identified proposed actions to modify vessel QP limits, vessel daily QP limits, and/or quota share (QS) limits to increase utilization rates (Agenda Item E.7.a, CAB Report 1, September 2017). The Council has requested that changes to both annual QP limits and daily QP limits be considered during the

biennial specifications process, while changes to QP control limits be investigated as a follow-on action.

With respect to the daily limits, the Council identified two alternatives: status quo and the removal of daily limits. The GMT believes that the following three alternatives more completely capture the Council's policy choices.

> **No Action:** Daily vessel limits exist for bocaccio rockfish south of 40°10' N. latitude (13.2 percent), cowcod south of 40°10' N. latitude (17.7 percent), darkblotched rockfish (4.5 percent), POP (4 percent), widow rockfish (5.1 percent[1]), yelloweye rockfish (5.7 percent), and Pacific halibut (5.4 percent).
>
> **Status Quo:** Under status quo procedures, when a stock is declared rebuilt, the daily vessel limit is removed through a Council action. As such, it would be expected that the limits for bocaccio rockfish south of 40°10' N. latitude, darkblotched rockfish, and POP would be removed, leaving vessel limits for only Pacific halibut, yelloweye rockfish, and cowcod south of 40°10' N. latitude.
>
> **Alt 1:** Eliminate daily limits

Relevant Factors For Analysis

Table 3-8 in the five-year review shows the number of vessel accounts at 90 percent or greater of their daily QP limit for each overfished species at the end of each year. Because the limit applies continuously throughout the year, the end of year measure is just a snapshot and cannot fully capture how many vessels are constrained throughout the year. The report states there is no way to assess how constraining the daily vessel limit is throughout the year with the available data. At the end of 2015, there were 14 instances of a species for which a vessel's account was 90 percent or greater of the daily limit, the highest number seen between 2011-2015. With several species being declared rebuilt in the upcoming year, under status quo policies and procedures the Council could take action to reduce the number of species the limit will apply to. This would mean reducing from eight to three: Pacific halibut north of 40°10' N. lat., yelloweye rockfish, and cowcod south of 40°10' N. lat. The Council may also wish to eliminate daily limits entirely (Alternative 1).

Daily vessel limits were assessed in Appendix A, A-2.2.3.e, to the Amendment 20 FEIS. The rationale for daily vessel limits is on page A-288 and the corresponding analysis is on page A-339. "The daily vessel limit was intended to allow flexibility for the Council to set lower vessel limits for overfished species and halibut without directly limiting a vessel's ability to achieve the harvests of target species allowed under the vessel limits" (A-339). It was expected that without these limits the Council might have difficulty setting overfished species and halibut limits that are sufficiently high to accommodate reasonable levels of bycatch but low enough that QP are not sequestered on vessels and thereby less available on markets. It was also assumed that low unused limits would increase the availability of QP on the market during the year and improve market functioning. There was some concern that the daily limit could encourage vessels to fish early in the season, so they could recharge their accounts before prices increased. However, the five-year review analysis indicates that attainment across all sectors for most overfished species from 2011-

[1] The proposed rule (81FR42295) for widow rockfish QS reallocation and divestiture deadlines proposes to remove the daily vessel limit since widow rockfish is rebuilt.

2015 has decreased since implementation (Appendix B). Furthermore, the five-year review indicates greater concern exists around the risk of disaster tows, or events that put the vessel over the annual vessel limit, exacerbated by species abundance increasing faster than quota allocations (page 3-174).

Workload: Low

16. Individual Species Limits

Background

The Council has requested that the individual species limits and the original analysis for target and bycatch species be reviewed, and adjusting limits based on attainment be considered.

Relevant Factors For Analysis

The five-year review includes a table of the number of instances for which a vessel's account was at 90 percent of their annual vessel use limit in each year (2011-2015) (Table 3-7). There were 113 total occurrences, with the most for petrale, followed by shortspine thornyheads south of 34° 27' N. lat., and sablefish north of 36° N. lat. These 113 occurrences accrued to 36 vessels across all five years, providing an indication of the number of vessels whose operations may have been limited by individual use limits.

Annual vessel use limits were assessed in Appendix A, A-2.2.3.e, to the Amendment 20 FEIS. The rationale for annual vessel limits is on page A-287 and the corresponding analysis is on page A-336. The vessel limit was intended to achieve the following: ensure that there is at least some minimum number of fishing vessels in the fleet to support more job positions and the purchase of more equipment, supplies, and support from fishing communities; increase the likelihood that harvest would be geographically dispersed; serve as a backup to the control limit, which may be difficult to monitor and enforce (Amendment 20 FEIS, page A-287). On a share of catch basis, vessel limits were set above the maximum historic catches of any individual vessel. In addition to vessel limits, a permit accumulation limit was also considered.

Workload: Dependent on number species

17. Establish Biennial Set-aside for Whiting Bycatch in Research and Incidental Open Access

Background

In March 2017 (Agenda Item I.4.b., GMT Report), the GMT recommended the Council consider including this action within the biennial harvest specifications cycle, or at the November Council meeting prior to the current year (i.e., November 2017 for the 2018 fishing year), in order to facilitate a more expedited rulemaking process. Currently, none of the Pacific whiting harvest specifications are published in the biennial rule, since they are decided annually in March or April. Therefore, the GMT and Council would need clarification from NMFS General Counsel if it is acceptable to publish only the set-asides in the biennial rule, and follow with the remaining values under the annual whiting rule. If establishing the set-asides in the biennial regulations is problematic, then set-asides could be recommended by the Council in November (as is being done at this meeting for 2018) or set-asides can continue to be recommended in March when the TAC is known.

Relevant Factors For Analysis

The whiting TAC is somewhat variable, with the 2017 TAC being higher than the highest value estimated when the 2015-2016 FEIS (intended to be a tiered document) was completed. Predicting the magnitude of the whiting TAC almost three years in the future (November 2017 for the 2020 TAC) may be difficult; however mortality in these sectors that use set-asides has been extremely low relative compared to any TAC.

Workload: Low

18. Remove the FMP Formula for Establishing the Darkblotched Rockfish and Pacific Ocean Perch At-sea Set-asides

Background:

Amendment 21-3 to the FMP proposes to modify the management of darkblotched rockfish and POP in the at-sea sectors from allocations to set-asides. Under Amendment 21-3, the current formula in the FMP, established in Amendment 21, would be used to determine sector-specific set-aside amounts. However, set-asides for the at-sea sector are generally established each biennium, based on best available data, and for the at-sea sector as a whole.

Relevant Factors For Analysis:

When the Council considered managing these two species as set-asides, darkblotched was projected to be rebuilt by 2017, and POP was still many years from being rebuilt. Recent stock assessments show that both stocks have rebuilt, and the POP stock is healthier and several magnitudes larger than previously assessed. Table 7 and

Table ***8*** below show the resulting ACLs and allocations (assuming 2017 off-the-top deductions) for 2017-2020 for darkblotched rockfish and POP with and without deductions from the ACL to account for unexpected catch events (or buffers). In July 2017, the ACL buffers of 50 mt of darkblotched rockfish and 25 mt of POP were released equally inseason to the at-sea sectors, in addition to 7 mt of POP from the incidental open access sector that was provided to the at-sea sectors in May.

Table 7. Darkblotched Rockfish ACL and resulting catcher processor (CP) and mothership (MS) Allocation/Set-Aside Values (in mt) Per Amendment 21

Year	ACL	With Buffer (Start of Year)		Without Buffer	
		CP	MS	CP	MS
2017	641	16.4[a]	11.6[b]	17.8	12.6
2018	653	16.7	11.8	18.2	12.8
2019	765	20.0	14.1	21.4	15.1
2020	815	21.4	15.1	22.9	16.2

[a] Allocation post April and June inseason actions is 41.4 mt.

[b] Allocation post April and June inseason actions is 36.6 mt.

Table 8. POP ACL and resulting CP and MS Allocation/Set-Aside Values (in mt) Per Amendment 21

Year	ACL	With Buffer (Start of Year)		Without Buffer	
		CP	MS	CP	MS
2017	281	12.7[a]	9.0[b]	14.1	9.9
2018	281	12.7	9.0	14.1	9.9
2019	4,340	235.6	166.3	237	167.3
2020	4,229	229.5	162.0	230.9	163.0

[a] Allocation post April and June inseason actions is 28.7 mt.

[b] Allocation post April and June inseason actions is 25 mt.

If the Council were to shift from using the Amendment 21 formula for establishing set aside amounts for the at-sea sectors for both darkblotched and POP, during each biennial process they would need to consider what amount each sector would need to prosecute their whiting fishery, the likelihood that they would exceed it and the corresponding risk to the ACL, and the probability that they would strand yield.

The GMT understands that Amendment 21-3 was categorically excluded from additional analysis under the National Environmental Policy Act (NEPA), because the act of changing the management to set=asides would not change any allocation and does not individually or cumulatively have a significant effect on the quality of the human environment. If the Council were to change from the Amendment 21 formula to setting the total set-aside amount each biennium, the GMT would ask that NMFS provide additional guidance on the level of additional NEPA analysis need. This action would require a FMP amendment.

Workload: Medium to Medium- High

19. Trawl Regulations Section 660.11 General Definitions

Background

In September, CDFW proposed "clean up and housekeeping" regulation changes that would apply to the exempted trawl fisheries (Agenda Item E.9.a, Supplemental CDFW Report, September 2017). At the October GMT meeting, we discussed that the proposed changes relate to the prohibited species section of the regulations (660.11 CFR) that govern retention of Dungeness crab. Specifically, CDFW proposes to prohibit retention of Dungeness crab caught seaward of California, which would make the prohibition coastwide.

> "*Prohibited species* means those species and species groups whose retention is prohibited unless authorized by provisions of this section or other applicable law. The following are prohibited species: Any species of salmonid, Pacific halibut, Dungeness crab caught seaward of Washington or Oregon, and groundfish species or species groups under the

[Pacific Coast Groundfish Fishery Management Plan] PCGFMP for which quotas have been achieved and/or the fishery closed."

Relevant Factors For Analysis

CDFW and the GMT would need to review the rationale for the original exclusion of California from the Dungeness crab prohibition, which appears to have been in regulation since 1978. The GMT notes that references to prohibited species in other sections of the regulations would be affected by this proposed regulation change; that is changing the definition section would apply to more sectors than just exempted trawl. Any potential impacts on vessels that would no longer be able to retain Dungeness crab would need to be analyzed.

Workload: Dependent on scope of action.

20. Non-IFQ Species Trip Limits

Background

Each biennium, the GMT brings forth trip limits designed to attain, but not exceed, the trawl allocations for species not managed with IFQ. Current species with trip limits include minor nearshore rockfish and black rockfish, cabezon, spiny dogfish, and big skate.

Relevant Factors For Analysis

The GMT has only identified potential changes to big skate trip limits to date, and these would be considered as routine.

Workload: Low

21. Adaptive Management Pass Through, Regulation Update

The GMT understands that additional action may be needed on this and will provide information in a supplemental report.

Non-Trawl

22. Rockfish Conservation Areas

Background

Modifications to the non-trawl RCA are being considered for both north and south of 40°10' N lat.

This proposal expands on Item #28 below (depth restrictions for the Pacific halibut directed fishery) that liberalizations made to the non-trawl RCA seaward boundary would apply to all fixed gear fisheries. The primary rationale would be to reduce enforcement issues, which could be resolved by other means (e.g., adding Pacific halibut to the vessel monitoring system declarations) to allow only halibut boats in shallower waters.

Relevant Factors For Analysis

The analysis to liberalize the seaward boundary of the non-trawl RCA would mainly focus on potential yelloweye rockfish impacts, as yelloweye rockfish are overfished and one of the main purposes of the non-trawl RCA was to minimize impacts to that species. There would be little fishery information to base this analysis on, since the non-trawl RCA has been in place since the beginning of the WCGOP in 2002. As discussed with Item #28 for halibut depth restrictions,

alternative analytical approaches such as species-habitat associations would need to be used (e.g., since yelloweye rockfish are associated with high relief rocky reef, opening up pockets of sand would likely not be problematic).

Workload: Medium/High

23. Open Access Trip Limits

Background

Each biennium, the GMT brings forth trip limits designed to attain, but not exceed, the OA HGs, or shares, for various species.

Relevant Factors For Analysis

While a majority of the trip limits that will be considered for 2019-2020 will be routine, the Council did identify a few alternatives in September 2017 that the GMT has flagged as new and may need additional impact analysis. These limits include:

a. Removing the March-April closures for South of 40° 10' N. lat. for shelf rockfish, bocaccio, shallow and deeper nearshore rockfish, lingcod, and scorpionfish, including a 1,200 lb. bi-monthly limit for shallow nearshore rockfish between 40° 10' N. lat. and 34° 27' N. lat.
b. Increasing lingcod trip limits for North of 40° 10’ N. lat.
c. 500 lb. monthly trip limit for slope and darkblotched rockfish for North of 40° 10' N. lat.
d. 50 lb. monthly trip limit for shortspine and longspine thornyheads for North of 40° 10' N. lat.

In addition, the GMT discussed at our October meeting the potential to increase canary rockfish limits (if there is interest).

Workload: Low

24. Limited Entry Fixed Gear Trip Limits

Background

Similar to OA above, each biennium, the GMT brings forth trip limits designed to attain, but not exceed, the LE HGs or shares for various species.

Relevant Factors For Analysis

Same as OA above, with the following limits which may require additional impact analysis:

a. Removing the March-April closures for South of 40° 10' N. lat. for shelf rockfish, bocaccio, shallow and deeper nearshore rockfish, lingcod, and scorpionfish
b. Increasing lingcod trip limits for North of 40° 10' N. lat.

In addition, the GMT discussed at our October meeting the potential to increase canary rockfish limits (if there is interest).

Workload: Low

25. Washington Recreational Fishery Season Structure

Background

The Washington Department of Fish and Wildlife (WDFW) will consider potential routine changes to season structures, depth restrictions, and bag limits for the recreational groundfish fishery in all Washington subareas. Changes will be developed with input and discussion from recreational stakeholders.

Relevant Factors For Analysis

WDFW will analyze recent mortality estimates along with updated ACLs and state specific HGs for target and bycatch species in the Washington recreational fishery, with the goal of establishing recreational management measures that result in catch that meets, but does not exceed, allowable harvest amounts.

Workload: Medium

26. Oregon Recreational Fishery Season Structure

Background

As part of the routine season setting process, the season structure, depth restrictions, bag limits, and size limits will be considered for the Oregon recreational fishery. Anglers in Oregon continue to express their desire for year-round fishing opportunities, therefore year-round seasons will be modeled, making adjustments to management measures to stay within federal- or state-specified harvest guidelines or shares.

Relevant Factors For Analysis

The Oregon recreational bottomfish fishery has seen marked increases in effort 2015-2017. Given that salmon opportunities are expected to continue to be poor over the next several years, the effort shift to the bottomfish fishery is likely to continue. Therefore, estimating projected angler trips will be key in setting up the season structure and modeling the associated impacts.

Workload: Medium

27. California Recreational Fishery Season Structure

Background

As part of routine processes, CDFW will be analyzing changes to seasonal, depth, and bag limit measures across all five Management Areas. Needs of the relevant communities will be considered, while simultaneously ensuring that catch remains within allowable amounts.

Relevant Factors For Analysis

Based upon the latest stock assessment results, the needs of the various fishing communities will need to be balanced with that of the allowable harvest. The RecFISH model will be used to determine impacts, coupled with the results of any bag limit analyses.

Workload: Medium

28. Modify Commercial Halibut Depth Restrictions off of Oregon and Washington

At the September Council meeting, ODFW (Agenda Item G.1.b. ODFW Report 2, September 2017) and CDFW (Agenda Item G.1.b. Supplemental CDFW Report 1, September 2017) proposed changes to the depth restrictions for the directed commercial halibut fishery through the modification of non-trawl RCA lines off of their states. This proposal was supported by the GAP (Agenda Item G.1.b. Supplemental GAP Report 1, September 2017) for implementation coastwide, not just off of Oregon and/or California. The Council adopted options that included moving the nearshore non-trawl RCA boundary for the commercial directed halibut fishery from 100 to 75 fathoms coastwide and creating cutouts from the 100 fathom non-trawl RCA boundary in Oregon. The original intent of the proposal was that this only be effective for vessels participating in the directed commercial halibut fishery, and only allowed on days open to the directed halibut fishery. Because of the challenges in monitoring associated with opening a closed area to one fishery with other fisheries using the same area and gear, a vessel monitoring system (VMS) and declaration requirement were also discussed.

Relevant Factors For Analysis

At the September Council meeting, changes to the structure of the directed commercial fishery from 'derby-style' to something else (e.g., longer fishing periods, individual quota, etc.) was discussed. While not scoped for implementation in 2018, it remains open for discussion. If the directed commercial fishery is changed to a longer season, this would mean that modified or eliminated depth restrictions would also be open longer for vessels fishing halibut.

For any changes to the non-trawl RCA boundary or implementation of any cut-outs, projected impacts to overfished species would need to be analyzed. Yelloweye rockfish is the only currently overfished species that interacts in this area and with this gear; however, there is no observer data to inform analyses regarding the liberalization of the seaward boundary of the trawl RCA, since the area being proposed to be opened has been in place since the beginning of WCGOP (2002). While there is one year (2017) of limited observer trips in the directed halibut fishery that could help inform this analysis, all fishing occurred outside of the proposed area to be reopened, and this data has not been processed as of yet.

The International Pacific Halibut Commission (IPHC) conducts an annual longline survey in the waters off of Washington and Oregon and in select years off of California. The survey station is on a 10 nmi. x 10 nmi. grid, from 20 to 275 fathoms. IPHC does collect information on non-halibut bycatch which could inform this analysis. However, the number of stations located in the area that would be opened with the proposed change to the seaward boundary of the non-trawl RCA is limited. There are six stations off of Washington, eight off of Oregon, and only one off of California that are located between the 75 fathom and 100 fathom regulatory lines.

Analyses to inform liberalization of the seaward non-trawl RCA boundary would therefore be based on proxy fishery data (i.e., before 2002 when vessels could retain yelloweye rockfish, and fish within the RCA) or be based on species-habitat associations for cut-outs (e.g., opening up pockets of sand or gravel that do not include rock could be used to expand halibut grounds while minimizing impacts to yelloweye rockfish).

Developing discrete cutouts (similar to the petrale sole cut-outs) would require a large amount of communication and coordination with fishery participants and the Enforcement Consultants to

determine the appropriate locations, sizes, and coordinates for any proposed cut-outs. This has the potential to be time- and resource-consuming.

Information that could potentially inform this analysis:

- Explore mapping observer data from around 2011-2016 to identify hot spots of halibut and yelloweye rockfish catch
- Identify magnitude of affected parties as the number of vessels in each state

The GMT would like to note that directed commercial Pacific halibut fishery is an incidental open access fishery, so any impacts to overfished species (e.g. yelloweye rockfish) would be deducted from the ACL and effects the allowable impacts for all other sectors downstream.

If this moves forward, the GMT requests that Pacific halibut data experts and managers be involved in this analysis. However, some of those people are also on the GMT, which may influence their ability to work on other groundfish related items.

Workload: High

Housekeeping Item

The GMT notes that giant grenadier is now officially designated as *Coryphaenoides pectoralis* by the American Fisheries Society. **The GMT recommends that the scientific binomial for giant grenadier be updated in the FMP, SAFE, regulations, and other relevant documents to reflect this change.**

Summary Table

Item #	Management Measure	Sector(s) affected	Anticipated Workload
All Sectors			
1	Mid-biennial ACL adjustments ("green light")	All	High
2	Carryover (September 2017, Agenda Item E.5 and Agenda Item E.7)	All	All-sector = high IFQ = low At-sea = low
3	Multi-Year Avg. Catch Policy (September 2017, Agenda Item E.5)	All	Low
4	Establishing and accessing ACL buffers	All	Low (now) High (inseason)
5	Modification or removal of lingcod size limit (June 2017, Agenda Item F.3)	All	Medium
6	USFWS ESA mitigation measures (April 2017; Agenda Item F.5) for seabirds	All	N/A
7	Increase access to the yelloweye ACL for all sectors	All	Incorporated into other items
8	Oregon Nearshore Rockfish Complexes	All	Low to Medium
9	Modifying Trawl/Non-Trawl Allocations	All	Dependent on species and range of allocation options
10	Non-salmonid ESA mitigation measures	All	N/A
11	Modify the outer boundary of the western Cowcod Conservation Area	All	High
12	Modifications/corrections to waypoints of existing trawl or non-trawl RCAs in CA	All	Medium, unless opening up new areas that haven't been previously open
Trawl			
13	ESA salmon mitigation measures (April 2017; Agenda Item F.3)	Trawl	N/A
14	Lingcod and sablefish discard mortality rates applied to IFQ QP (June 2017, Agenda Item F.3)	IFQ Trawl	Low to Medium
15	Shorebased IFQ QP Daily Vessel Limits (September 2017, Agenda Item E.7)	Trawl	Low
16	Individual Species Limits (September 2017, Agenda Item E.7)	Trawl	Dependent on number and attainment of species
17	Establish biennial set-asides for whiting bycatch in research and incidental open access	Trawl	Low
18	Remove the FMP formula for establishing the darkblotched and POP at-sea set-asides. Establish each biennium based on best available data as is done for other set-aside species	Trawl	Medium to High

19	Update Trawl Regulations Section 660.11 General Definitions Update (Incidental Crab)	Trawl	Low to Medium
20	Non-IFQ Species Trip Limits	Trawl	Low
21	Adaptive Management Pass-Thru, regulation update	Trawl	N/A
	Non-Trawl		
22	Non-Trawl RCA Adjustments	FG	Medium to High
23	OA Trip Limits and RCA adjustments	FG	Low
a	*Removing the March-April closures for South of 40° 10' N. lat. for shelf rockfish, bocaccio, shallow and deeper nearshore rockfish, lingcod, and scorpionfish, including a 1,200 lb. bi-monthly limit between 40° 10' N. lat. and 34° 27' N. lat.*		
b	*Increasing lingcod trip limits for North of 40° 10' N. lat.*		
c	*500 lb. monthly trip limit for slope and darkblotched rockfish for North of 40° 10' N. lat.*		
d	*50 lb. monthly trip limit for shortspine and longspine thornyheads for North of 40° 10' N. lat.*		
24	LEFG Trip Limits and RCA adjustments	FG	Low
a	*Removing the March-April closures for South of 40° 10' N. lat. for shelf rockfish, bocaccio, shallow and deeper nearshore rockfish, lingcod, and scorpionfish*		
b	*Increasing lingcod trip limits for North of 40° 10' N. lat.*		
25	WA recreational season structure	WA Rec	Medium
26	OR recreational season structure	OR Rec	Medium
27	CA recreational season structure	CA Rec	Medium
a	*Year-round fishery in southern mgmt. area*		
b	*Evaluate changes in other mgmt. area*		
c	*California scorpionfish closure in Sept-Dec*		
d	*Bag limits for Black, canary RF, and lingcod*		
e	*Increase lingcod size limit*		
f	*Rec access to 75 fathoms in Southern CA bight*		
g	*Western CCA access for recreational sector to 40 fm*		
28	Eliminate or modify depth restriction in directed Pacific halibut fishery off OR and Ca	FG OA	High
a	*Option for commercial halibut fishery to add VMS requirement and declaration process*		
b	*Move non-trawl RCA from 100 to 75 fm for pacific halibut fishery coastwide*		
c	*Modify commercial non-trawl RCA 100 fm in OR to create cut outs*		

N/A = information not available at the writing of this report

PFMC
10/24/17