

Chinook bycatch in the GOA pollock fisheries WORKPLAN

In December 2010, the Council initiated an analysis to address Chinook salmon bycatch in the GOA pollock fisheries. The proposed analysis examines amending the GOA Groundfish FMP either to create a PSC limit for western/central GOA pollock fisheries that would close the fishery once reached, and/or require all vessels participating in the western/central GOA pollock fisheries to be a member of a salmon bycatch conservation cooperative, with contractual requirements to retain all salmon until counted by an observer, and other salmon bycatch reduction measures. The Council requested that this action be completed on an expedited timeframe, ideally to be implemented within twelve months, and indicated that this action was an extremely high priority. The Council's December 2010 motion is included as an appendix at the end of this workplan (pages 13-15).

This workplan addresses some outstanding issues on which staff is requesting Council direction:

- Timing of this action, given that implementation for the beginning of the 2012 fishing year is not possible
- Expectations for outreach
- Factors to consider in adopting a hard Chinook salmon bycatch cap for the W/C GOA pollock fisheries
- Clarifications on the range of options included for apportioning the cap under alternative 2 between the Western and Central regulatory areas

1. Timelines

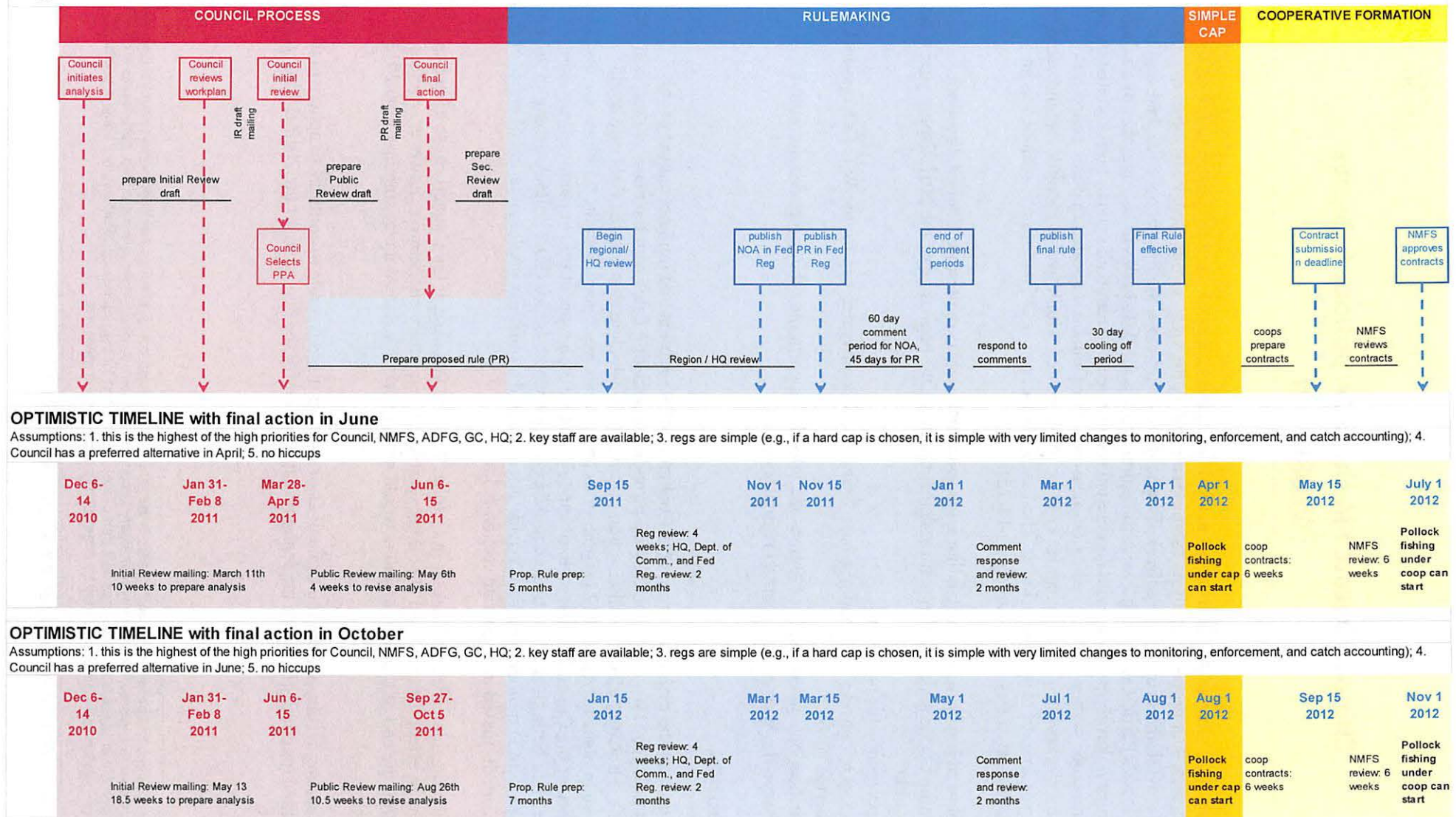
Figure 1 illustrates the major milestones for Council/NMFS adoption and implementation of this amendment package. Two draft timelines are provided, associating dates with the major milestones. The most expedited timeline identifies final action in June 2011, which means that the final rule could potentially be in place by April 2012 (assumptions and caveats associated with the timelines are discussed below). Whether the Council chooses a hard cap (alternative 2), a mandatory cooperative provision (alternative 3), or both, the earliest these could be effective would be for GOA pollock fishing in the fall of 2012, the C and D pollock seasons. Considerations related to midyear implementation of either of these alternatives are discussed in a separate section below.

A second timeline identifies final action in October 2011. In this case, if the Council chose a hard cap, it could also be in effect for the C and D pollock seasons. A mandatory cooperative, however, could not be approved until the end of the year, and thus would not be operational until the beginning of the 2013 fishing year¹.

Staff is requesting feedback from the Council as to whether it is advisable to continue to adhere to the most expedited timeline, given that implementing this action for the beginning of the 2012 fishing year is not possible.

¹ Although not required, it is possible that participants in the fishery will develop cooperative-type arrangements to control Chinook salmon bycatch prior to implementation of any mandatory cooperative system. If cooperatives are mandated, participants are likely to begin development of cooperative measures as a part of their preparation for the requirement. Particularly if subject to a binding Chinook salmon bycatch cap, participants may be compelled to develop such measures.

Figure 1 Draft timelines for GOA Chinook action



Assumptions under either timeline, to accommodate the 'expedited' nature of this action

Under either timing scenario, various assumptions are made in order to keep the amendment on an expedited timeline. The Council has already indicated that this action is a very high priority; in order to meet these timelines, **this action would also have to be a very high priority for all agencies:** for NMFS and ADFG staff (whose input is necessary for the analysis), and for those participating in the NMFS and NOAA GC regional and headquarters review process. Key staff, who might be tasked on other issues, would need to be available at the appropriate times in order to meet these timelines.

Another major assumption is that **the Council will select a preliminary preferred alternative at initial review.** This will allow the agency to begin preparations for the proposed rule prior to final action. The timelines also assume that the preferred alternative will be one or both of the alternatives in the analysis. Adding additional complexity to the preferred alternative may impact the simplicity of the implementing regulations, and consequently the timeline.

The timelines also assume that **an EA is the appropriate NEPA document.** In order to proceed with an EA, the preferred alternative(s) in the analysis would have to support a Finding of No Significant Impact.

Final action in June versus October

June final action

- most expedited – allows for implementation of either a cap or a cooperative prior to the GOA pollock C and D seasons (note, see caveats with midyear implementation below)
- initial review in April will likely produce a document that is less polished, and may still have gaps and placeholders that will need to be addressed

October final action

- allows for implementation of a hard cap prior to the pollock C and D seasons, but fishing under an approved cooperative would not be feasible until the start of the 2013 fishing year
- more time for staff to put together a polished initial review draft
- more time for public input/ opportunity for outreach prior to Council final action

Rulemaking for a hard cap

The timelines assume that if the hard cap under alternative 2 is chosen as preferred alternative by the Council, the structure of the cap would be simple – an annual, fixed threshold for the WGOA or CGOA. Once reached, inseason management would close the fishery to the directed pollock fishery in that management area. This simple cap timeline also assumes that we are not incorporating a sophisticated management and enforcement protocol, such as has been implemented under Amendment 91 in the Bering Sea. If the Council recommended, for example, that all vessels be subject to 100% observer coverage and all salmon be censused, then the proposed timeline could not be met. The infrastructure for sophisticated catch accounting does not exist in the GOA to the same degree as it did in the Bering Sea when the Council recommended Amendment 91. Similarly, allocating a cap among cooperatives would add substantially to the implementation timing.

Rulemaking for mandatory cooperatives

The timeline for the cooperative alternative assumes that NMFS would have a limited role in reviewing the cooperative formation standard contracts (e.g., ensuring that the terms and conditions are in the contract). Presumably, a person could join any cooperative subject to the same terms and conditions as any other member. This timeline assumes that NMFS would not have to provide an appeal right if a

person does not join a cooperative. The Council will need to provide some guidance as to how it would like NMFS to approve a cooperative application. If only 1 or 2 cooperatives can form in a regulatory area, the Council will need to define the terms for authorizing a cooperative. Note, a discussion paper evaluating specific issues with respect to alternative 3, mandatory cooperatives, is being presented separately as part of this agenda item at the February 2011 Council meeting.

Midyear implementation

Midyear implementation of either the hard cap or the cooperative is possible. The Council will, however, need to describe clearly how it intends that midyear implementation should work, particularly with respect to the hard cap. The cap cannot be applied retroactively to bycatch that has already occurred in the year (e.g., if the cap was implemented in August 2012, only bycatch accrued during the C/D seasons would accrue to the cap). The Council may choose to specify that for the implementation year only, a smaller cap would be implemented (for example, proportionate to the amount of pollock fishing remaining in the year). If the Council intends to consider recommending a proportionately smaller hard cap that would only be in place for part of the implementation year, the analysis needs evaluate the impacts of a seasonal cap (which is not currently anticipated based on the suite of alternatives). **As this will add considerably to the analysis, and given the expedited nature of this action, the Council would need to indicate at the February 2011 Council meeting that such an option should be evaluated in the analysis.**

Effect on projects currently under rulemaking

Many of the NMFS staff that could have a role in this project are also working on other issues. If the Council continues to expedite this action, then staffing may need to be reconsidered. For example, if the Council chooses a mandatory cooperative preliminary preferred alternative, the development of the proposed rule would likely involve staff currently working on rulemaking for GOA Pacific cod sector splits, GRS revisions, WAG regional exemption, Crab ACL, and Salmon FMP revisions. All of these issues have been previously identified as high, or relatively high, priority issues by either the Council or NMFS. A more detailed assessment of the effect on existing projects could be provided once the Council reviews this workplan, but current projects will slip.

2. Expectations for outreach

The timeline has been developed without consideration of additional time allocated for outreach. Should the Council be interested in conducting outreach specific to this project beyond the normal public process, it is currently envisaged that such activities would have to be worked in around the existing schedule, in order to allow for expedited completion of this analysis. The Council's outreach committee will likely discuss outreach needs for this action at their next committee meeting, tentatively targeted for March 2011.

It is worth noting that this is the first of two amendments that the Council has initiated to address GOA Chinook salmon bycatch. This first action evaluates reducing Chinook salmon in the GOA pollock fishery either through a hard cap or a mandatory cooperative requirement; the second amendment analysis will include management measures for all the trawl fisheries that catch Chinook salmon as bycatch, and will evaluate a broader suite of management measures to reduce bycatch.

The Council already has a comprehensive outreach effort underway by staff and Council members, in February and March, for the Bering Sea chum salmon bycatch analysis. The intention of the chum bycatch outreach effort is to engage stakeholder input early in the process, prior to finalizing the

Council's alternatives for that analysis, so that stakeholders have an opportunity to influence the scope of the analysis, in addition to providing feedback prior to selection of a preferred alternative. In contrast, the scope of the alternatives for the current GOA Chinook salmon bycatch in the pollock fishery analysis has already been defined, and has purposefully been streamlined in order to expedite the analysis and implementation of management measures. While public input on the Council's ultimate decision on this package is always important and solicited, it is staff's understanding that the objective here is to implement a management measure as quickly as possible to limit the possibility of excessive bycatch occurring in the GOA target fishery that catches the most Chinook salmon. Consequently, it may instead be appropriate for the Council to focus any outreach efforts on the second GOA Chinook salmon bycatch analysis that will begin after the current analysis specific to the pollock fishery is finished. This forthcoming analysis offers more comprehensive solutions to Chinook salmon bycatch across all GOA trawl fisheries, and offers an opportunity for stakeholders to engage with the Council early on in the analytical development process.

Regardless of the Council's decision as to the extent of its outreach activities for this action, the agency will respond to requests for tribal consultation throughout the Council and NMFS decision-making and rulemaking process.

3. Factors to consider in adopting a hard Chinook salmon bycatch cap for the W/C GOA pollock fisheries

Adopting a hard cap in the GOA pollock fishery may involve a number of difficult decision points for the Council. Available data to analyze historical bycatch by area in the western and central GOA are limited. The GOA pollock fishery is a very fast-paced fishery, which complicates the monitoring of catch to ensure that the cap is not exceeded. Some of the issues of concern are highlighted below.

Apportionment of the cap between the western and central GOA

As has been described in the discussion paper preceding the initiation of this analysis, the limitations of observer data in the GOA need to be recognized by the Council in apportioning the hard cap between the western and central GOA. The level of observed catch, which is used for calculating historic GOA salmon bycatch estimates by area, is far lower in the GOA than in the Bering Sea. Consequently, there is greater uncertainty about historic bycatch estimates for the GOA compared to estimates for the Bering Sea.

Additionally, most prohibited species data in the GOA is based on CGOA fishing vessel observer data. Chinook salmon bycatch rates from fishing vessels in the CGOA are frequently applied to vessels fishing in the WGOA, because often there are not any observed vessels fishing in the WGOA. The CGOA and WGOA pollock fisheries have distinct characteristics, and Chinook salmon bycatch patterns are spatially variable on an annual, and possibly seasonal, basis. These factors may affect the Council's ability to determine an equitable distribution of a hard cap between the areas on the basis of the historic average bycatch (number or rate) by area.

With respect to apportionment based on the historic pollock distribution, there are also annual and seasonal fluctuations in pollock distribution between the western and central GOA. Historic apportionment between the areas would be based on average pollock distribution between the areas, and would need to recognize that actual pollock distribution in each year may vary from the historical average.

Analyzing the impacts of the cap on salmon fisheries and communities dependent on salmon resources

With respect to impacts of reducing salmon bycatch in groundfish fisheries, there are limitations on the extent the analysis will be able to evaluate effects on salmon populations, and fisheries and communities that depend on those salmon. As described in the discussion paper used to initiate this analysis, we do not have bycatch composition information in the GOA, so we do not have any information that allows us to speculate from which regions the bycaught salmon originated. In the Bering Sea analysis, an adult equivalent (AEQ) model was used to estimate a) how many of the bycaught salmon were likely to have returned to their streams as adults, and b) to which river system or region they would likely have returned. This meant that the Bering Sea analysis could include a quantitative impact analysis of salmon savings on salmon fisheries or communities. This analysis was not without controversy since the underlying data was largely obtained from relatively small sample sizes, collected opportunistically. For this GOA pollock analysis, we do not have sufficient data to develop an AEQ model. Therefore our ability to assess the impacts of reducing salmon bycatch on salmon populations is constrained.

Given that we do not know the Chinook stock composition of GOA trawl bycatch, we will assume that the pollock fishery could be catching Chinook that originate from anywhere in Alaska or elsewhere. We are summarizing available information from limited tagging studies to show what Chinook stocks may be present in the GOA, but it is not possible to estimate the proportion any stock has contributed to the bycatch, and even data from a systematic sampling plan may not allow us to eliminate any particular area from consideration.

The State is compiling background material on the status of Chinook salmon stocks around the state, which will include general status and trends, and for 2010, will indicate whether the status of Chinook stocks was such that fishing restrictions on the commercial, sport, or subsistence fisheries were put in place. In order to keep this analysis on its expedited timeframe, however, we are not planning to include background material on the performance of each Chinook salmon fishery (commercial, recreational, personal use, or subsistence) across the state. This background information is not directly necessary for the analysis, because we are not able to use it to draw conclusions about the impacts of reduced salmon bycatch on salmon fisheries, given that we do not have an AEQ model or estimate of bycatch composition. Also, we will be including only a limited qualitative discussion of impacts of salmon reduction on communities dependent on salmon resources for the same reason.

Management of the cap inseason

The GOA pollock fishery is a fast-paced fishery that is generally completed within days during each season. The participating vessels are either subject to 30% observer coverage, or are unobserved. Even if the Council requires, under component 2 of alternative 2, that all participating vessels be subject to a minimum of 30% observer coverage, the overall level of observed catch remains low.

Under these conditions, there may not be adequate time to respond to high incidental catch data before a cap is exceeded. For example, in 2010 in the western GOA, catch accounting data indicates that 21,064 salmon were caught as bycatch within a single weekly recording period. Even discounting the single week bycatch high that occurred in 2007 in the central GOA², each year there are consistently individual weeks in the central GOA when the accrued bycatch exceeds 2,000 Chinook salmon. It is not likely, under the

² In 2007, catch accounting data indicates that 24,673 salmon were caught in a single reporting week. The calculation of the estimate is consistent with NMFS' established protocol for using observer data to extrapolate salmon numbers in observed portions of catch to total catch estimates for the catch accounting system. NMFS has, however, acknowledged that the majority of the salmon estimated in this week was extrapolated from a small observed haul (with very few salmon and a very small amount of groundfish) to a large unobserved haul.

current monitoring program, that NMFS would have the ability to estimate bycatch in real-time with precision, and close the fishery when a bycatch cap is reached inseason. Given the fast past of the fishery, it will be difficult for the agency to inform vessels of current bycatch levels in such a way that vessels can use that information to prevent them from exceeding the cap. As described in the discussion paper used to initiate this action, it is the practice in the GOA pollock fishery for vessels to bring their pollock catch onboard without sorting it to remove bycatch or incidental catch at sea. Vessels are unlikely to be able to know how much salmon is caught as bycatch until they offload and deliver their catch to the plant. The Council will need to consider and provide guidance about what the appropriate consequence should be if the cap is exceeded before the fishery can be closed.

An additional complication in the western GOA is that many vessels deliver their harvest to tenders. There is currently no monitoring of transferred catch, nor are there observers on tenders. If the salmon bycatch in these deliveries is not observed until the tender offloads at the plant, this may represent an additional delay in the catch information that will increase the difficulty of monitoring and enforcing a hard bycatch cap. In addition, lack of monitoring on tenders could provide an opportunity for salmon discards at sea, and reduce the reliability of salmon bycatch data collected at the plant.

The hard cap may result in changed fishing practices that raise other management issues, as well. For example, hard caps may incentivize and increase discard, which will be difficult to track with the low levels of observer coverage.

4. Clarifications to the range of options in the Council motion for apportioning the hard cap under Alternative 2

The Council's motion includes the following options for apportioning the hard cap under Alternative 2:

Alternative 2: Chinook salmon PSC limit and increased monitoring.

Component 1: 15,000, 22,500, or 30,000 Chinook salmon PSC limit (hard cap).

Option: Apportion limit between Central and Western GOA

- a) proportional to the pollock TAC.
- b) proportional to historic average bycatch rate of Chinook salmon (5 or 10-year average).
- c) proportional to historic average bycatch number of Chinook salmon (5 or 10-year average).

For reference, the data that is being used to calculate the apportionments under Alternative 2 is provided in Table 1, at the end of this discussion paper. Also provided, in Table 2 and Table 3, is a retrospective application of the various caps, as identified in the options, to the western and central GOA pollock fisheries, indicating in which week (listed by week-ending date) the fishery would have closed.

Allowing a single GOA-wide cap

As written, the Council's motion leaves open the possibility that a hard cap might be applied to the central and western areas combined. It would be helpful for the Council to identify at this meeting whether it intends to consider adopting a cap that would not be apportioned by regulatory area. At the December 2010 Council meeting, there was Council discussion and public testimony indicating that the pollock fisheries of the western and central areas involve different participants, fishing practices, and timing, and also that the pattern of Chinook salmon encounters differs between the areas. If the option for a GOA-wide cap remains in the analysis, a discussion of the impacts of how a GOA-wide cap may change dynamics across these fisheries would need to be included. **If the Council does not intend to consider a**

GOA-wide bycatch cap, it would simplify the analysis to be able to remove this possibility from the table.

Option A – proportional to the pollock TAC

Under option A (and potentially also option B), it is unclear whether the Council intended to choose an apportionment based on historic TAC proportionate to the western and central areas, or whether the Council intended that the apportionment between the areas would vary annually based on what proportion of the pollock TAC is allocated to each area. **It would be helpful for the Council to clarify whether it intends an historic or an annual floating apportionment for this option.**

For both the 5- and 10-year average, the proportion of the pollock TAC allocated to the western GOA is 37%, and 63% for the central GOA. If it is intended that a fixed apportionment is to be determined based on historical allocation between the areas, the analysis will use the 37/63% western/central split. If the Council intends that the apportionment float annually, based on the exact proportion of the pollock TAC for each area, the analysis will also need to look at the high and low points of the range of pollock TAC distribution. In the last ten years, the allocation to the western GOA has varied between 35% and 41% of the total western/central pollock TAC.

There are other considerations that must be taken into account if the apportionment of the bycatch cap is left to float on an annual basis. Presumably, the calculation of the cap apportionment would need to occur as part of the harvest specifications process. Given the way our specifications process works, a cap would need to be calculated annually for the next two years. The fishery would open on the bycatch cap as calculated the previous year, and would be superseded in mid-March/April with a revised cap based on the most recent pollock TAC allocation. There may be management ramifications for this process that will be brought forward in the analysis, if the Council chooses to retain the option of an annually floating apportionment.

OPTION A: apportion limit between CW GOA proportional to the historic pollock TAC (based on 5 and 10 year average)

	15,000 GOA cap	22,500 GOA cap	30,000 GOA cap
	average	average	average
Western: 37%	5,550	8,325	11,100
Central: 63%	9,450	14,175	18,900

OPTION A: apportion limit between CW GOA proportional to the annual pollock TAC

	15,000 GOA cap		22,500 GOA cap		30,000 GOA cap	
	low end	high end	low end	high end	low end	high end
Western: 35%-41%	5,250	6,150	7,875	9,225	10,500	12,300
Central: 65-59%	8,850	9,750	13,275	14,625	17,700	19,500

Option B – proportional to the historic average bycatch rate of Chinook salmon, applied to the pollock TAC

It is assumed that the Council intended tha Option B not only apportion the limit based on the historic average bycatch rate of Chinook salmon, but that the bycatch rate also be applied proportionally to the

pollock TAC between the two areas³. In this case, the discussion included above under Option A also applies here, namely that it would be helpful to clarify whether the Council would like to see this calculation based on the historic pollock allocation between areas, or whether it is intended that this should be an annual calculation to be made during the harvest specifications process.

OPTION B: apportion limit between C/W GOA proportional to historic average bycatch rate of Chinook salmon (5 or 10 year average) and historic pollock TAC (5 and 10 year average)

	15,000 cap		22,500 cap		30,000 cap	
	5 yr avg	10 yr avg	5 yr avg	10 yr avg	5 yr avg	10 yr avg
5 / 10 year average						
Western (.33 / .22): 36% / 31%	5,400	4,650	8,100	6,975	10,800	9,300
Central (.35 / .28): 64% / 69%	9,600	10,350	14,400	15,525	19,200	20,700

OPTION B: apportion limit between C/W GOA proportional to historic average bycatch rate of Chinook salmon (5 or 10 year average) and annual pollock TAC

	15,000 cap		22,500 cap		30,000 cap	
	low end	high end	low end	high end	low end	high end
Western (5 yr ave .33): 34% - 40%	5,100	6,000	7,650	9,000	10,200	12,000
Western (10 yr ave .22): 29% - 35%	4,350	5,250	6,525	7,875	8,700	10,500
Central (5 yr ave .35): 60% - 66%	9,000	9,900	13,500	14,850	18,000	19,800
Central (10 yr ave .28): 65% - 71%	9,750	10,650	14,625	15,975	19,500	21,300

Option C - proportional to the historic average bycatch number of Chinook salmon

Option C bases the apportionment of the cap on the average bycatch number of Chinook salmon attributed to each area.

OPTION C: apportion limit between C/W GOA proportional to historic average bycatch number of Chinook salmon (5 or 10 year average)

	15,000 cap		22,500 cap		30,000 cap	
	5 yr avg	10 yr avg	5 yr avg	10 yr avg	5 yr avg	10 yr avg
Western: 30% / 27%	4,500	4,050	6,750	6,075	9,000	8,100
Central: 70% / 73%	10,500	10,950	15,750	16,425	21,000	21,900

Total range of options under consideration for apportioning the cap between the western and central GOA

As currently understood by staff, and unless further modification is made by the Council at the February 2011 meeting, there are eleven different options for apportioning the cap between the western and central areas that would be included in the analysis. Under these options, the western GOA would receive between 27% and 41% of the GOA-wide cap that is adopted by the Council. This provides a range in the analysis of between 4,050 and 12,300 salmon based on a cap that is either 15,000, 22,500, or 30,000 GOA-wide. For the central GOA, then, the range would vary between 59% and 73% of the GOA-wide cap. The option resulting in the lowest apportionment of the cap to the western GOA is the 10-year historical average of bycatch under Option C; the option resulting in the highest apportionment is Option A, using the highest allocation of pollock TAC to the western GOA, which occurred in 2007. The full ranges for the western and central GOA are listed below.

³ Note, this has also been confirmed with the maker of the Council's December 2010 motion.

TOTAL RANGE OF OPTIONS under consideration for apportioning the cap. ordered from lowest to highest

Western GOA	Option C - 10yr	Option B - 10yr low	Option C - 5yr	Option B - 10yr avg	Option B - 5yr low	Option B - 10yr high	Option A - low	Option B - 5yr avg	Option A - avg	Option B - 5yr high	Option A - high
15,000 cap:	4,050	4,350	4,500	4,800	5,100	5,250	5,250	5,400	5,550	6,000	6,150
22,500 cap:	6,075	6,525	6,750	7,200	7,650	7,875	7,875	8,100	8,325	9,000	9,225
30,000 cap:	8,100	8,700	9,000	9,600	10,200	10,500	10,500	10,800	11,100	12,000	12,300

Central GOA	Option A - low	Option B - 5yr low	Option A - avg	Option B - 5yr avg	Option A - high	Option B - 10yr low	Option B - 5yr high	Option B - 10yr avg	Option C - 5yr	Option B - 10yr high	Option C - 10yr
15,000 cap:	8,850	9,000	9,450	9,600	9,750	9,750	9,900	10,200	10,500	10,650	10,950
22,500 cap:	13,275	13,500	14,175	14,400	14,625	14,625	14,850	15,300	15,750	15,975	16,425
30,000 cap:	17,700	18,000	18,900	19,200	19,500	19,500	19,800	20,400	21,000	21,300	21,900

Table 1 Data for apportioning caps between western and central GOA

Year	Western GOA (610)						Central GOA (620 and 630)					
	pollock TAC	TAC as % of total pollock TAC for W/C	Chinook bycatch	Bycatch as % of total bycatch for W/C	Pollock catch	Bycatch rate, # salmon/ mt pollock	pollock TAC	TAC as % of total pollock TAC for W/C	Chinook bycatch	Bycatch as % of total bycatch for W/C	Pollock catch	Bycatch rate, # salmon/ mt pollock
2001	31,056	38%	1,072	12%	21,302	0.05	50,261	62%	8,239	88%	40,081	0.21
2002	17,730	35%	2,548	51%	17,281	0.15	32,895	65%	2,482	49%	31,926	0.08
2003	16,788	36%	738	17%	16,299	0.05	30,024	64%	3,557	83%	32,416	0.11
2004	22,930	36%	2,327	18%	23,420	0.10	40,530	64%	10,655	82%	40,363	0.26
2005	30,380	36%	5,951	22%	31,282	0.19	53,122	64%	21,429	78%	50,089	0.43
2006	28,918	37%	4,529	29%	25,001	0.18	48,940	63%	11,138	71%	48,335	0.23
2007	25,012	41%	3,359	10%	18,069	0.19	35,830	59%	31,647	90%	34,973	0.90
2008	17,602	35%	2,116	21%	15,497	0.14	32,821	65%	7,971	79%	33,336	0.24
2009	15,249	38%	441	17%	14,674	0.03	25,156	62%	2,123	83%	24,070	0.09
2010	26,256	36%	31,581	72%	28,593	1.10	47,213	64%	12,334	28%	45,782	0.27
range	35-41%						59-65%					
5 yr average	37%		30%		0.33 (49%)		63%		70%		0.35 (51%)	
10 yr average	37%		27%		0.22 (44%)		63%		73%		0.28 (56%)	

Table 2 Retrospective application of the caps to the western GOA pollock fishery, indicating in which week (listed by week-ending date) the fishery would have closed. Fields that are left empty indicate that the fishery would not have been affected in those years.

Year	15,000 GOA cap										22,500 GOA cap										30,000 GOA cap															
	C - 10yr	B - 10yr low	C - 5yr	B - 10yr avg	B - 5yr low	B - 10yr high	A - low	B - 5yr avg	A - avg	B - 5yr high	A - high	C - 10yr	B - 10yr low	C - 5yr	B - 10yr avg	B - 5yr low	B - 10yr high	A - low	B - 5yr avg	A - avg	B - 5yr high	A - high	C - 10yr	B - 10yr low	C - 5yr	B - 10yr avg	B - 5yr low	B - 10yr high	A - low	B - 5yr avg	A - avg	B - 5yr high	A - high			
	4,050	4,350	4,500	4,800	5,100	5,250	5,250	5,400	5,550	6,000	6,150	6,075	6,525	6,750	7,500	7,650	7,875	7,875	8,100	8,325	9,000	9,225	8,100	8,700	9,000	9,600	10,200	10,500	10,500	10,800	11,100	12,000	12,300			
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Table 3 Retrospective application of the caps to the central GOA pollock fishery, indicating in which week (listed by week-ending date) the fishery would have closed. Fields that are left empty indicate that the fishery would not have been affected in those years.

Year	15,000 GOA cap									22,500 GOA cap									30,000 GOA cap																	
	A - low 8,850	B - 5yr low 9,000	A - avg 9,450	B - 5yr avg 9,600	A - high 9,750	B - 10yr low 9,750	B - 5yr high 9,900	B - 10yr avg 10,200	C - 5yr 10,500	B - 10yr high 10,650	C - 10yr 10,950	A - low 13,275	B - 5yr low 13,500	A - avg 14,175	B - 5yr avg 14,400	A - high 14,625	B - 10yr low 14,625	B - 5yr high 14,850	B - 10yr avg 15,300	C - 5yr 15,750	B - 10yr high 15,975	C - 10yr 16,425	A - low 17,700	B - 5yr low 18,000	A - avg 18,900	B - 5yr avg 19,200	A - high 19,500	B - 10yr low 19,500	B - 5yr high 19,800	B - 10yr avg 20,400	C - 5yr 21,000	B - 10yr high 21,300	C - 10yr 21,900			
2001																																				
2002																																				
2003																																				
2004	Oct 9	Oct 9	Oct 9	Oct 9	Oct 9	Oct 9	Oct 9	Oct 9	Oct 9	Oct 30																										
2005	Feb 26	Feb 26	Feb 26	Feb 26	Feb 26	Feb 26	Feb 26	Feb 26	Mar 5	Mar 5	Mar 5	Mar 19	Mar 19	Mar 19	Mar 19	Mar 19	Mar 19	Sep 10	Sep 24	Oct 1	Oct 1	Oct 8	Oct 8	Oct 8	Oct 8	Oct 22	Oct 22	Oct 22	Oct 22	Oct 22	Oct 22	Oct 22	Oct 29	Oct 29		
2006	Sep 23	Sep 23	Oct 7	Oct 7	Oct 14	Oct 14	Oct 14	Oct 21	Oct 21	Oct 21	Oct 28																									
2007	Mar 24	Mar 24	Mar 24	Mar 24	Mar 24	Mar 24	Mar 24	Mar 24	Mar 24	Mar 24	Mar 24	Mar 24	Mar 24	Mar 24	Mar 24	Mar 24	Mar 24	Mar 24	Mar 24	Mar 24	Mar 24	Mar 24	Mar 24	Mar 24	Mar 24	Mar 24	Mar 24	Mar 24	Mar 24	Mar 24	Mar 24	Mar 24	Mar 24	Mar 24		
2008																																				
2009																																				
2010	Oct 2	Oct 2	Oct 2	Oct 2	Oct 2	Oct 2	Oct 2	Oct 9	Oct 9	Oct 9	Oct 9																									

APPENDIX

GOA Chinook salmon bycatch - FINAL Council motion – DECEMBER 2010

The Council adopts the following problem statement and moves the following alternatives for initial review.

Problem statement:

Chinook salmon bycatch taken incidentally in GOA groundfish fisheries is a concern, and no salmon bycatch control measures have been implemented to date. Current observer coverage levels and protocols in some GOA groundfish trawl fisheries raise concerns about bycatch estimates and may limit sampling opportunities. Limited information is available on the origin of Chinook salmon taken as bycatch in the GOA; it is thought that the harvests include stocks from Asia, Alaska, British Columbia, and lower-48 origin. Despite management actions by the State of Alaska to reduce Chinook salmon mortality in sport, commercial, and subsistence fisheries, minimum Chinook salmon escapement goals in some river systems have not been achieved in recent years. In addition, the level of GOA Chinook salmon bycatch in 2010 has exceeded the incidental take amount in the Biological Opinion for ESA-listed Chinook salmon stocks. The sharp increase in 2010 Chinook bycatch levels in the GOA fisheries require implementing short-term and long-term management measures to reduce salmon bycatch to the extent practicable under National Standard 9 of the Magnuson-Stevens Act. In the short term, measures focused on the GOA pollock fisheries are expected to provide the greatest savings. In the long term, comprehensive salmon bycatch management in the GOA is needed.

Alternatives for expedited review and rule making:

The below alternatives apply to directed pollock trawl fisheries in the Central and Western GOA.

Alternative 1: Status quo.

Alternative 2: Chinook salmon PSC limit and increased monitoring.

Component 1: 15,000, 22,500, or 30,000 Chinook salmon PSC limit (hard cap).

Option: Apportion limit between Central and Western GOA

- a) proportional to the pollock TAC.
- b) proportional to historic average bycatch rate of Chinook salmon (5 or 10-year average).
- c) proportional to historic average bycatch number of Chinook salmon (5 or 10-year average).

Component 2: Expanded observer coverage.

Extend existing 30% observer coverage requirements for vessels 60'-125' to trawl vessels less than 60' directed fishing for pollock in the Central or Western GOA.

Alternative 3: Mandatory salmon bycatch control cooperative membership.

In order to fish in the Central or Western GOA pollock fisheries a vessel must be a member of a salmon bycatch control cooperative for the area where they are participating. Cooperative formation will be annual with a minimum threshold (number of licenses).

Cooperative contractual agreements would include a requirement for vessels to retain all salmon bycatch until vessel or plant observers have an opportunity to determine the number of salmon and collect any scientific data or biological samples. Cooperative contractual agreements would also include measures to control Chinook salmon bycatch, ensure compliance with the contractual full retention requirement, promote gear innovation, salmon hotspot reporting, and monitoring individual vessel bycatch performance.

Annual cooperative reports to the Council would include the contractual agreements and successes and failures for salmon bycatch controls by season and calendar year.

The Council requests staff explore options related to the following aspects of mandatory cooperative formation:

- Minimum number of licenses required to promote meaningful exchange of information and cooperation to avoid bycatch under the current directed fishery management structure. (Minimum threshold for cooperative formation should be set to ensure all eligible licenses have a reasonable opportunity to participate).
- Evaluate the costs and benefits of minimum thresholds of cooperative membership that would allow for no more than 1 or 2 cooperatives in each region.
- Options to ensure participants outside of a bycatch control cooperative would be subject to regulatory bycatch controls if it is determined mandatory cooperative membership is not possible.
- Appropriate contract elements and reporting requirements.

Alternatives for regular review and rule making track:

The below alternatives apply to non-pollock trawl fisheries in the Central and Western GOA.

Alternative 1: Status quo.

Alternative 2: 5,000, 7,500, or 10,000 Chinook salmon PSC limit (hard cap).

Option 1: Apportion limit between Central and Western GOA.

Option 2: Apportion limit by directed fishery.

Applies to both options: Apportion proportional to historic average bycatch of Chinook salmon (5 or 10-year average).

Alternative 3: Mandatory salmon bycatch control cooperative membership.

In order to fish in the Central or Western GOA trawl fisheries a vessel must be a member of a salmon bycatch control cooperative for the area where they are participating. Cooperative formation will be annual with a minimum threshold (number of licenses).

Cooperative contractual agreements would include measures to control Chinook salmon bycatch, promote gear innovation, salmon hotspot reporting, and monitoring individual vessel bycatch performance. Annual cooperative reports to the Council would include the contractual agreements and successes and failures for salmon bycatch controls by season and calendar year.

The below alternatives applies to all trawl fisheries in the Central and Western GOA.

Alternative 4: Full retention of salmon.

Vessels will retain all salmon bycatch until the number of salmon has been determined by the vessel or plant observer and the observer's collection of any scientific data or biological samples from the salmon has been completed.

Option: Deploy electronic monitoring or observers to monitor for discards in order to validate salmon census data for use in catch accounting.

The Council also requests staff to provide the following:

- Chinook salmon bycatch rate data for each GOA groundfish fishery by month and area.
- Correlation between bycatch rates and time of day (based on observer data or anecdotal information).

- Correlation between bycatch rates and time of year (based on observer data or anecdotal information).
- Information on the flexibility under Steller sea lion measures to adjust season dates.
- Current trip limit management and implications of lowering GOA pollock trip limits.
- Information on current excluder use, effectiveness of salmon excluders, and deployment of excluders on smaller trawl vessels.
- A discussion of potential benefits, with respect to available bycatch measures and salmon savings, of a cooperative management structure for the GOA pollock fisheries. The discussion should assume a cooperative program for the Central and Western GOA directed pollock catcher vessels. Licenses qualifying for the program would annually form cooperatives that would receive allocations based on the catch histories of members. Catcher vessel cooperatives would be required to associate with a shore-based processor in the GOA, but members may change cooperatives and cooperatives may change processor associations annually without penalty.
- Analysis of management alternatives should include potential impacts of those actions on subsistence users.

**Discussion paper on cooperatives
Gulf of Alaska Chinook Salmon Bycatch
North Pacific Fishery Management Council
February 2011**

At its December 2010 meeting, the Council initiated an action to address Chinook salmon bycatch in the Gulf of Alaska pollock fisheries. As a part of the development of alternatives, the Council requested staff to prepare a discussion paper concerning certain aspects of a proposed system of cooperatives that would be intended to reduce Chinook salmon prohibited species catch (PSC). Specifically, the Council requested discussion of cooperative formation, cooperative size, the need to create fishing opportunities for non-members of cooperatives, and cooperative reporting requirements. This paper addresses these issues. In addition, this paper briefly addresses the proposal that cooperatives require full retention of Chinook salmon to improve information concerning bycatch and its effects on stocks and the interaction of the cooperative system with a proposed a Chinook PSC hard cap in the fisheries.

Purpose and need statement

To frame its action, the Council adopted the following purpose and need statement

Chinook salmon bycatch taken incidentally in GOA groundfish fisheries is a concern, and no salmon bycatch control measures have been implemented to date. Current observer coverage levels and protocols in some GOA groundfish trawl fisheries raise concerns about bycatch estimates and may limit sampling opportunities. Limited information is available on the origin of Chinook salmon taken as bycatch in the GOA; it is thought that the harvests include stocks from Asia, Alaska, British Columbia, and lower-48 origin. Despite management actions by the State of Alaska to reduce Chinook salmon mortality in sport, commercial, and subsistence fisheries, minimum Chinook salmon escapement goals in some river systems have not been achieved in recent years. In addition, the level of GOA Chinook salmon bycatch in 2010 has exceeded the incidental take amount in the Biological Opinion for ESA-listed Chinook salmon stocks. The sharp increase in 2010 Chinook bycatch levels in the GOA fisheries require implementing short-term and long-term management measures to reduce salmon bycatch to the extent practicable under National Standard 9 of the Magnuson-Stevens Act. In the short term, measures focused on the GOA pollock fisheries are expected to provide the greatest savings. In the long term, comprehensive salmon bycatch management in the GOA is needed.

Alternatives

As suggested by the purpose and need statement, the Council developed two sets of alternatives for analysis. The first set of alternatives was developed for expedited review, to ensure that more accessible reductions in Chinook salmon bycatch are achieved in the near term. The alternatives for expedited analysis, which follow, include a range of Chinook salmon PSC limits with expanded observer coverage, and mandatory salmon bycatch control cooperatives. This paper addresses the bycatch control cooperative alternative.

Alternatives for expedited review and rule making:

The below alternatives apply to directed pollock trawl fisheries in the Central and Western GOA.

Alternative 1: Status quo.

Alternative 2: Chinook salmon PSC limit and increased monitoring.

Component 1: 15,000, 22,500, or 30,000 Chinook salmon PSC limit (hard cap).

Option: Apportion limit between Central and Western GOA

- a) proportional to the pollock TAC.
- b) proportional to historic average bycatch rate of Chinook salmon (5 or 10-year average).
- c) proportional to historic average bycatch number of Chinook salmon (5 or 10-year average).

Component 2: Expanded observer coverage.

Extend existing 30% observer coverage requirements for vessels 60'-125' to trawl vessels less than 60' directed fishing for pollock in the Central or Western GOA.

Alternative 3: Mandatory salmon bycatch control cooperative membership.

In order to fish in the Central or Western GOA pollock fisheries a vessel must be a member of a salmon bycatch control cooperative for the area where they are participating. Cooperative formation will be annual with a minimum threshold (number of licenses).

Cooperative contractual agreements would include a requirement for vessels to retain all salmon bycatch until vessel or plant observers have an opportunity to determine the number of salmon and collect any scientific data or biological samples. Cooperative contractual agreements would also include measures to control Chinook salmon bycatch, ensure compliance with the contractual full retention requirement, promote gear innovation, salmon hotspot reporting, and monitoring individual vessel bycatch performance.

Annual cooperative reports to the Council would include the contractual agreements and successes and failures for salmon bycatch controls by season and calendar year.

The Council requests staff explore options related to the following aspects of mandatory cooperative formation:

- Minimum number of licenses required to promote meaningful exchange of information and cooperation to avoid bycatch under the current directed fishery management structure. (Minimum threshold for cooperative formation should be set to ensure all eligible licenses have a reasonable opportunity to participate).
- Evaluate the costs and benefits of minimum thresholds of cooperative membership that would allow for no more than 1 or 2 cooperatives in each region.
- Options to ensure participants outside of a bycatch control cooperative would be subject to regulatory bycatch controls if it is determined mandatory cooperative membership is not possible.
- Appropriate contract elements and reporting requirements.

The third alternative proposes the development of a system of cooperatives that would be formed for the purpose of reducing Chinook prohibited species catch (PSC). Two structural approaches are being considered for establishing reasonable, effective incentives for Chinook avoidance. Under the first, cooperative membership would be required for participation in a directed pollock fishery in the Western Gulf of Alaska or Central Gulf of Alaska. Cooperative formation requirements (including minimum membership thresholds or limits on the number of cooperatives that could form) would be established to ensure the effective communication and cooperation needed to meet bycatch goals, while allowing all eligible persons a reasonable opportunity to participate in the fisheries. If such requiring cooperative membership of all participants is not feasible, fishing could be permitted outside of cooperatives subject to additional specific regulatory measures to ensure that Chinook PSC bycatch goals are met.

Mandatory cooperative membership v. alternative regulations for non-members

Mandatory cooperative membership is intended to facilitate information sharing and fleet coordination that could be important to achieving Chinook avoidance. In the absence of this communication and coordination of fishing effort, each vessel might rely on its own fishing to assess salmon bycatch at different times and locations (i.e., trial and error by each vessel). While a cooperative structure may be used to reduce bycatch, it could pose other problems. In considering mandatory cooperative membership, two related considerations should be assessed. First, any system of cooperatives must allow all eligible license holders a reasonable opportunity to participate in the fishery. Second, the Council must develop a system with enough specificity that the cooperative does not effectively receive a delegation of management authority for the fishery. In other words, the requirement that participants have membership in a cooperative should not vest in the cooperative the effective ability to define rules for the fishery (such as who is permitted to fish, when, and how much they are allowed to catch). In a liberal system that allows many cooperatives to form, management authority is not likely to arise in a cooperative, as persons unhappy with the rules of a cooperative could simply form another cooperative with its own rules. Under a system in which cooperative membership is required (and participants are constrained from creating a new cooperative), it is possible that the cooperative could use that constraint to effectively define its own management rules for the fishery. To avoid a delegation of management authority under a mandatory cooperative system that permits only a single cooperative, regulatory requirements should specifically define the rules that a cooperative would implement, rather than allow the cooperative the authority to define those rules itself. Consequently, any mandatory cooperative program should be developed to either allow eligible license holders the opportunity to form a substitute cooperative (in the event they are unable or unwilling to accept the rules of an existing cooperative) or clearly define a cooperative's discretion to define rules for cooperative members. Limiting the authority of the cooperative, together with allowing multiple cooperatives to form, strengthens arguments that the system both allows reasonable fishing opportunities and does not constitute a delegation of management authority to the cooperative.

The Council motion suggests that the Chinook bycatch benefits to be derived from a cooperative program are generated through communication and coordination of fleet. In addition, the motion suggests that these benefits may not be attained, if liberal rules lead to the formation of several cooperatives. If the

Council elects to develop a cooperative system with limited opportunities for formation of cooperatives and no fishing opportunity outside of cooperatives, care should be taken to 1) define the rules that a cooperative may develop and impose on members to avoid any delegation of management authority and 2) ensure that all eligible persons can enter the fishery (i.e., join a cooperative subject to fair and reasonable terms). If the Council elects to instead develop a cooperative system that allows a fishing opportunity outside of the cooperative structure, it would need to define the rules for vessels that fish outside of the cooperative to ensure that those vessels 1) meet the Council's bycatch goals and 2) are not unfairly disadvantaged in the fishery.

Mandatory cooperative structures

A system of mandatory cooperatives would likely be more acceptable and defensible, if the system allowed the formation of multiple cooperatives. Yet, a minimal number of relatively large cooperatives is likely to ensure that the benefits of cooperatives are achieved. In its initial consideration of this action, the Council suggested adopting a rule that directly limits the number of cooperatives that may be formed. Alternatively, the Council might consider a threshold that requires a minimum number of eligible licenses to form a cooperative, which if set appropriately would limit the number of cooperatives that might form. The fleet structure and historic participation cause some difficulties with either a direct limitation on the number of cooperatives or a minimum membership threshold of eligible licenses for cooperative formation. Currently, 118 and 98 License Limitation Program (LLP) licenses are endorsed for participation in the Central Gulf and Western Gulf trawl fisheries, respectively. Yet, since 2003 no more than 53 and 31 vessels have participated in these fisheries in any year, respectively (see Table 1). Defining cooperative formation based on the total number of eligible licenses would likely be problematic, since less than half of those eligible typically participate in the fisheries. Soliciting membership to a cooperative from persons who have no interest in the fishery could complicate negotiations surrounding the formation and may even be an obstacle to a cooperative achieving its bycatch goals.

An alternative approach to defining cooperative formation thresholds could be considered. Instead of establishing a threshold based on licenses that are eligible for the fishery, the Council could define a rule based on the past year's participation. For example, a threshold could be defined as a portion of the licenses that participated in the preceding year's fishery – i.e., licenses used for a targeted landing of pollock in the preceding year). If the Council chose a threshold requiring more than one-quarter or one-third of the participants from the preceding year, a maximum of 3 or 2 cooperatives could be formed, respectively. Although this presents a possibility that more than one cooperative would form, allowing a substantial minority to form a cooperative might be important to the acceptability of the system. In addition, a high threshold, such as one-half of the fishery's participants, might prevent cooperative formation altogether, if participants develop competing factions. Basing the threshold on the prior year's fishing would create an identifiable pool of persons for defining the threshold, all of which have some experience in the fishery. The threshold could be administered by posting a list of eligible licenses at the end of each season – comprised of licenses used for a targeted landing of pollock in the area in the

preceding year. This list would provide notice to participants of those persons whose membership would count toward attaining the threshold.

Table 1. Targeted pollock and accompanying Chinook salmon PSC catch in the Central and Western Gulf (2003-2010) .

Area	Year	Number of vessels	Total catch		Catch of lowest quartile				Catch of lowest tertile			
			Pollock	Chinook salmon PSC	Pollock		Chinook Salmon		Pollock		Chinook Salmon	
					Tons	As a percent of total	Chinook salmon PSC	As a percent of total	Tons	As a percent of total	Chinook salmon PSC	As a percent of total
Central Gulf of Alaska	2003	49	32,416	3,557	629	1.9	60	1.7	1,343	4.1	314	8.8
	2004	53	40,363	10,655	1,195	3.0	303	2.8	2,378	5.9	699	6.6
	2005	47	50,089	21,429	2,598	5.2	641	3.0	5,122	10.2	1,544	7.2
	2006	45	48,335	11,138	2,194	4.5	363	3.3	4,020	8.3	676	6.1
	2007	38	34,973	31,647	1,646	4.7	499	1.6	3,334	9.5	1,436	4.5
	2008	44	33,336	7,971	1,379	4.1	514	6.5	2,217	6.7	711	8.9
	2009	40	24,070	2,123	1,480	6.1	287	13.5	2,395	9.9	344	16.2
	2010	41	45,782	12,334	3,082	6.7	684	5.5	4,786	10.5	1,394	11.3
Western Gulf of Alaska	2003	31	16,299	738	551	3.4	10	1.3	1,116	6.8	35	4.7
	2004	25	23,420	2,327	2,276	9.7	200	8.6	3,916	16.7	440	18.9
	2005	28	31,282	5,951	3,308	10.6	1,646	27.7	5,048	16.1	1,901	32.0
	2006	28	25,001	4,529	1,863	7.4	460	10.1	3,045	12.2	668	14.7
	2007	25	18,069	3,359	179	1.0	17	0.5	436	2.4	110	3.3
	2008	19	15,497	2,116	205	1.3	33	1.5	477	3.1	60	2.8
	2009	22	14,674	441	1,117	7.6	27	6.2	1,894	12.9	58	13.1
	2010	26	28,593	31,581	1,673	5.9	2,849	9.0	3,040	10.6	4,684	14.8

Source: NOAA Fisheries Catch Accounting Data.

While the threshold would allow for multiple cooperatives, it also could allow for persons who took a relatively small share of the total catch to form a cooperative. For example, in the Western Gulf in 2009, under a 25 percent threshold, it is possible that 5 licenses with near 2 percent of the total catch would meet the threshold. A one-third threshold could have been met by 7 vessels with slightly less than 3 percent of the catch. Although this circumstance is possible, whether such segment of the fleet would have reason to develop a cooperative is questionable, as the administrative and reporting costs would seem prohibitive and burdensome to a segment of the fleet with only a marginal interest in the fishery. In addition, a cooperative made up of the more active vessels in the fleet would also likely form. Although it may be preferable to develop a threshold based on catches (such as a threshold requiring licenses that accounted for in excess of 25 percent of the total catch in the fishery from the preceding year), it is questionable whether such a threshold could be effectively administered, as it would require annually releasing catch data of all vessels in the fishery. In addition, it could lead to debates concerning catch amounts and whether a certain cooperative application satisfies the threshold. The simpler approach of requiring only a threshold portion of the participating vessels from the prior year may achieve the goal of ensuring that each cooperative has a large enough membership to achieve reasonable coordination necessary to meet bycatch goals.

While this cooperative threshold rule would make cooperative formation more predictable and manageable, steps should be taken to ensure eligible licenses can enter the fishery. As an initial step, cooperatives could be required to accept any eligible person as a member, subject to the same terms and conditions that apply to other cooperative members. Requiring the cooperative to accept eligible persons

as members would serve not only new entrants, but also would ensure that a portion of past participants (able to meet the cooperative threshold) are unable to close other past participants out of the fishery. Although this rule would allow for entrance to a cooperative, care should be taken to develop additional rules to ensure that new entrants are treated fairly. For example, a cooperative that has delayed starts for persons who have not met a minimal bycatch avoidance standard in the preceding season could operate simply as a standdown for all new entrants, who have no recent history in the fishery. To avoid such a result, the rule could require that entrants be subject to rules not more restrictive than those generally applicable to the cooperative members. For example, impositions of standdowns (or early starts) based on past performances on new entrants may disadvantage these entrants in an unfair manner, or even effectively prevent an entrant from having a reasonable fishing opportunity. The cooperative system must be structured to allow reasonable entry opportunities.

Understanding the potential effectiveness of a system of cooperatives requires an understanding of the structure of the fishery and measures a cooperative might use to avoid Chinook bycatch. In addition to cooperative declared area closures and gear modifications, cooperatives are likely to use temporal fishing constraints to avoid Chinook salmon. For example, a the large majority of a cooperative's fleet may standdown, while a few vessels scout certain areas of the grounds to determine whether Chinook salmon bycatch rates are acceptably low. Using information gathered from its fleet, a cooperative may choose not to fish at certain times, either delaying or suspending fishing on certain days (or at certain times of day). For these temporal measures to be effective, a cooperative must be able to suspend fishing for a period of time, without its members sacrificing a substantial portion of their catch from the fishery. Examining data from recent years, however, show that season have been relatively short (see Table 2) and further suggests that fishing occurs over brief periods within some seasons (see Table 3). In the recent years, some seasons have been as short as a single day. Although other seasons have been substantially longer, because of fishing practices, season lengths alone may not reflect the effort level in the fisheries.

Table 2. Gulf of Alaska pollock seasons (2010).

Area	Season	Opening	Closing	Reason	
610 (WG)	A	January 20	February 27	TAC	
	B	March 20	April 12		
	C	August 20	September 10		
	D	October 1	October 9		
		October 14	October 17		
620 (CG)	A	January 20	February 25		
	B	March 10	March 16		
	C	August 25	September 7		
	D	October 1	October 6		
630 (CG)	A	January 20	February 5		
		February 28	March 2		
	B	March 10	March 10		
		March 22	March 25		
	C	August 25	August 27		
		September 18	September 19		
	D	October 1	October 2		
		October 15	October 18		

Source: NMFS Inseason management reports

Catch data in the fisheries shows that fishing takes place over more than 10 weeks each year in each management area (i.e., 610, 620, and 630). Yet, the weekly catches frequently exceed one-half of the seasonal catch. Specifically, in areas 610 and 620, more than three times a year, on average, half of a season's catch taken in a single reporting week. In area 630, slightly less than 3 times a year, on average, half of a season's catch is taken in a single reporting week. The occurrence of these high weekly catches despite the season being open substantially longer likely reflects the fleet's willingness to make arrangements to limit fishing effort. These agreements may serve a few purposes. In some cases, standdowns may be used to ensure that roe conditions are acceptable in the fishery. Management needs may also drive some agreements to limit effort. The catching power of the fleet (relative to the available total allowable catches) has complicated in-season management, as those total allowable catches could be quickly exceeded. Managers have carefully monitored catch inseason, at times, announcing brief openings of a day or two, to prevent total allowable catch overages. In some cases, the fleet has agreed to limit its effort to induce managers to open the fishery, when managers have been concerned that the amount of effort exceeds their ability to time a closure to avoid a total allowable catch overage. Managers often communicate with participants concerning the timing of their efforts. These conditions need to be considered when evaluating the operation and effects of a cooperative structure on Chinook salmon bycatch and developing a cooperative structure to achieve reductions.

Table 3. Weeks of fishing, the number of weeks when vessels catches exceeded one-half or one-third of the average seasonal catch (2003-2010).

Area	Year	Weeks of fishing	Number of weeks		Number of weeks with more than half of participating vessels
			one-half of the average seasonal catch	one-third of the average seasonal catch	
610	2003	7	3	3	3
	2004	8	4	5	6
	2005	8	4	5	7
	2006	15	2	5	6
	2007	17	3	4	2
	2008	13	3	4	6
	2009	7	5	5	5
	2010	18	2	3	8
620	2003	11	3	5	3
	2004	15	2	3	2
	2005	16	3	5	5
	2006	17	3	5	4
	2007	14	3	3	3
	2008	13	4	4	4
	2009	10	3	3	3
	2010	10	4	6	6
630	2003	11	3	4	3
	2004	14	3	4	4
	2005	13	3	5	4
	2006	18	2	5	6
	2007	14	1	5	3
	2008	7	4	5	4
	2009	4	2	2	2
	2010	11	4	4	4

Source: NMFS Catch Accounting.

The high catch rates in the fisheries raise concerns with any multiple cooperative system that attempts to derive Chinook salmon PSC reductions through actions affecting the timing of fishing effort. For example, if two cooperatives are permitted to form and one cooperative attempts to reduce Chinook salmon bycatch by delaying fishing (while the other does not) it might be possible for early starting cooperative's efforts to substantially reduce the portion of the total allowable catch available to the cooperative that delays fishing. If a system that permits multiple cooperatives is adopted, an intercooperative agreement could be required to address these issues. An intercooperative agreement could be used to ensure that a cooperative's decision to pursue Chinook salmon avoidance through changing the timing of its fishing does not forsake a fair fishing opportunity for its members. An intercooperative agreement could be negotiated to time fishing in a manner that does not disadvantage either cooperative or provide for a compensatory mechanism, if one cooperative's choice of timing unfairly disadvantages the other.

Requiring all cooperatives to be part of an intercooperative agreement would be preferred to requiring all participants to be part of a single cooperative, as an intercooperative would be more limited in its terms. Rather than requiring all participants to join a single association (which could be interpreted as imposing associations on some participants), an intercooperative would allow most terms to be defined by the cooperative with the intercooperative only defining those terms that ensure that no cooperative has an

unfair advantage. This separation would allow participants more choice of associations and specific fishing terms through the cooperatives, at the same time using the intercooperative to ensure that no cooperative's internal measures to reduce Chinook salmon PSC creates an unfair advantage or disadvantage.

Although more liberal than a single cooperative structure, the cooperative formation rule suggested here would allow few cooperatives to form. Consequently, the Council should consider limiting the scope of cooperative agreements to ensure that the system is not interpreted as a delegation of management authority to cooperatives. Since the action is intended to address Chinook salmon PSC, a reasonable starting point is to limit cooperative agreements to measures intended to address Chinook salmon PSC. Additionally, cooperatives should be permitted to adopt ancillary measures to ensure that all participants in the fishery have a fair opportunity. These measures might include standdowns and other effort limits, which might be used to allow vessels to experiment with gear modification or other fishing practices that could reduce catch rates without sacrificing a fishing opportunity. A program that creates an opportunity for a few large limited purpose cooperatives to form, but includes provision for an intercooperative program allow participants to pursue Chinook PSC avoidance measures without overly limiting any participant's opportunities in the fishery.

A limited access fishery for participants outside of cooperatives

An alternative to a mandatory cooperative structure is a structure that allows participants who choose not to join a cooperative, an opportunity to fish outside of cooperative. Such a structure might be preferred to a mandatory cooperative structure, as it would avoid any complications arising from a requirement that a participant join an association to access the fishery. The complication for a structure with a limited access opportunity is the development of rules for that limited access fishing that both ensure its participants a reasonable fishing opportunity and creates incentives to reduce Chinook salmon PSC without disproportionately reducing the incentive for cooperatives to pursue Chinook PSC avoidance measures.

Any limited access structure would be intended to allow limited access participants to fish, but not gain a competitive advantage over the cooperative participants. Cooperatives, however, are likely to attempt to use time constraints on effort (e.g., delaying fishing while members monitor Chinook PSC rates) to reduce Chinook bycatch. Developing a management system for a limited access fishery that allows flexibility to delay starts or suspend fishing is likely unworkable for the agency. The agency would likely have limited ability to time limited access openings to correspond with cooperative decisions or to limit the catch of limited access participants to ensure that cooperatives had access to some proportional share of the total allowable catch.

A further complication would likely arise from any management measures intended to reduce Chinook PSC in the limited access fishery. These measures would need to be static, modified only through Council actions. The need to resort to Council action for their modification presents challenges. In the event cooperatives develop effective means of addressing Chinook PSC, applying those measures in the limited access fishery would be delayed by the process of completing the required regulatory analysis and

Council action. While it is possible that some participants in the limited access fishery may voluntarily adopt measures, no participants could be compelled to adopt the measures in the absence of Council action. It is possible that some limited access participants may see the inapplicability of cooperative Chinook avoidance measures (particularly those that reduce pollock catch rates) as creating an opportunity to increase their catch from the fishery. This opportunity could not only increase the incentive for fishery participants to remain in a limited access fishery with higher Chinook PSC rates, but could also reduce the incentive for cooperatives to develop or adopt effective Chinook avoidance measures. Although the initial response to this circumstance might be to impose relatively stringent restrictions on a limited access fishery (thereby creating a substantial incentive for cooperative membership), the limited access fishery must provide reasonable access to the fishery.

A starting point for defining the limited access fishery should be the development of management measures, the combination of which effectively limit Chinook PSC, while providing a fishing opportunity for participants comparable to the opportunity available in a cooperative. Yet, information concerning effective means of avoiding Chinook PSC is expected to evolve as cooperatives experiment with new measures and adapt behaviors in response to their findings. Consequently, a measure that might currently seem altogether reasonable could be obsolete in the near future (as being proven ineffective relative to other measures). Such a circumstance does not lend itself to the development of rigid measures of the type likely to be needed for management of the limited access fishery. For example, it might be reasonable to limit catches during a particular time period due to high Chinook salmon PSC rates during that period. Over time, the timing of high Chinook salmon PSC rates may change. While a cooperative may be able to quickly respond to these changes, it is unlikely that a similar regulatory response would be possible for the limited access fishery. The rigidity of regulatory management might prevent the development of an effective limited access management structure that provides both a fishing opportunity comparable to that of cooperative members and effective Chinook PSC avoidance.

The difficulty of defining an effective suite of measures for addressing Chinook PSC, while maintain a reasonable fishing opportunity relative to cooperatives whose Chinook avoidance measures are likely to change over time suggest that creating a limited access fishery may not effectively address Chinook bycatch and provide a reasonable opportunity in the fishery.

Cooperative management and reporting requirements

The Council's objective for this action is to adopt a management system that achieves practicable reductions in Chinook salmon PSC rates. While a variety of measures could be considered to achieve this end, the reasons for recent relatively high Chinook salmon PSC are not known with certainty. Consequently, specific management requirements (such as specific gear requirements) may not reliably achieve the Council's objective. As a result, the Council's motion suggests a variety of measures should be considered.

The motion first suggests that cooperatives agreements include a full retention requirement under which members would retain all salmon bycatch to facilitate counting and sampling for biological purposes.¹ **In order to implement a full retention requirement, regulations will need to be modified (as a part of this action) to allow salmon retention.** Currently, regulations in the Gulf of Alaska prohibit vessels from retaining Chinook salmon (see 50 CFR 679.21). Assuming that regulation is modified, the full retention requirement could be implemented and overseen by cooperatives. Plant observers could then collect samples and count salmon, increasing biological information from the fishery. The cooperative would not only establish this full retention requirement, but would also be required to establish a system for ensuring compliance. In addition to providing scientific information concerning the fishery, cooperatives might also use this information to assess the success of its Chinook salmon avoidance measures and to internally manage its fishing effort.

A variety of other measures would (or could) be required of cooperatives to aid in Chinook salmon avoidance. The cooperatives would also be required to establish a hotspot reporting system, under which cooperative members collect information concerning bycatch rates that can then be used to redirect effort from areas of unacceptably high Chinook salmon PSC. The information benefits arising from such a reporting system could be important to achieving acceptably low rates of Chinook salmon PSC. Time and area limitations on fishing could be incorporated into the cooperative agreement. These limits might be either fixed prior to the season (if certain times and areas can be firmly determined to be prone to high Chinook bycatch) or may be announced in season using the information gathered through the hotspot reporting system. In either case, the basis for limitations should be clearly articulated in the cooperative agreement. Cooperatives could also be required to promoting gear modifications for the purpose of reducing Chinook salmon PSC. A cooperative would also be required to monitor individual vessel performance, as a means to facilitate development and implementation of individual incentives for Chinook salmon avoidance. The provisions used to establish individual incentives should be clearly set out in the cooperative's agreement.² In addition, the system of monitoring should create a reliable basis for cooperative administration of incentives (including the imposition of penalties and granting of rewards).

Cooperatives would also be required to annually report on both the contents of cooperative agreements and the performance of the cooperative. Reporting requirements should provide information verifying the

¹ It should be noted that **salmon counts arrived at through the cooperative's full retention measure would not be used for fishery management under observer coverage of the Council's recently adopted observer program amendment.** Salmon bycatch for fishery management would be based on estimates generated by the observer program sampling. In the past, counts generated by full retention, in the absence of comprehensive observer coverage, were rejected as unreliable and potentially biased. More comprehensive monitoring (possibly through video monitoring) could be developed to substantiate census based counts in the future, but would not be timely for this action. While managers may choose not to rely on census counts for management without more extensive monitoring, cooperatives could choose to use those counts in their internal oversight, if they are satisfied with their reliability.

² It should be noted that the incentives must be carefully devised to ensure entry opportunities in the fishery. Consequently, an eligible vessel entering the fishery must not be unfairly disadvantaged for not having a bycatch record in the fishery.

cooperative's adherence to each of the cooperative requirements established by the Council. In addition, cooperative reports should provide the Council with a general description of the cooperative's Chinook bycatch avoidance during the year with specific information concerning the efficacy of the various measures required by the Council and any other measures adopted. The annual reports should describe the cooperative's agreement in a manner that enables the Council to determine whether the various measures achieve the Chinook salmon avoidance objectives.

Cooperatives could also be required to include in their reports a description of the rationale behind each cooperative measure to establish that the measure is within the scope of the cooperative's authority. Assuming an intention to limit the scope cooperative measures to those intended to address Chinook salmon PSC, cooperative reports could be required to describe the rationale behind each cooperative measure and how that measure addresses Chinook salmon PSC. Since additional measures may be included in an agreement to ensure fair fishing opportunities within and among cooperatives, the need for and rationale behind those rules should also be incorporated in a cooperative's annual report. Requiring cooperatives to establish the nexus between the measures adopted and the cooperative's objective of addressing Chinook salmon PSC while maintaining fair fishing opportunities can be used to ensure that cooperative do not effectively assume management authority for the fishery.

The Council should also consider whether intercooperative reports should be required, should an intercooperative agreement be reached. Such a report could describe any terms of the intercooperative agreement, any measures implemented under those terms and their effects. As with cooperative reports, the intercooperative report could also be required to describe how each measure served the objective of addressing Chinook salmon PSC, while ensuring participants have a fair fishing opportunity.

The Council's December motion provides a reasonable framework for the development of a more specific motion defining the cooperative alternative. Using the Council's motion, the following cooperative requirements could be used as a starting point for specifically defining this alternative:

To be eligible to participate in the Central Gulf of Alaska or Western Gulf of Alaska pollock fishery, the holder of an appropriately endorsed License Limitation Program license would be required to join a Chinook salmon bycatch control cooperative.

Each cooperative would be formed for participation in a single regulatory area (e.g., Central Gulf of Alaska or Western Gulf of Alaska).

To form, a cooperative is required to have more than:

- a) 25 percent; or
- b) 33 percent;

of the licenses that participated in the applicable regulatory area in the preceding year.

Any cooperative is required to accept as a member any eligible person, subject to the same terms and conditions that apply to all other cooperative members. In addition, the cooperative agreement shall not

disadvantage any eligible person entering the fishery for not having an established Chinook salmon bycatch history in the fishery.

Each cooperative agreement shall contain:

A requirement that all vessels retain all salmon bycatch until the plant observers have an opportunity to determine the number of salmon and collect scientific data and biological samples.

Measures to promote gear innovations and the use of gear and fishing practices that contribute to Chinook salmon avoidance.

Vessel reporting requirements to be used to identify salmon hotspots and an appropriate set of measures to limit fishing in identified hotspots.

A system of vessel performance standards that creates individual incentives for Chinook salmon avoidance, which could include rewards or penalties based on Chinook salmon bycatch.

A system of information sharing intended to provide vessels with timely information concerning Chinook salmon bycatch rates.

A monitoring program to:

ensure compliance with the full retention requirement,

catalogue gear use and fishing practices and their effects on Chinook bycatch rates,

ensure compliance with vessel reporting requirements and limits on fishing under the system of salmon hotspots,

determine compliance with measures that require use of fishing gear or practices to avoid Chinook salmon PSC, and

verify vessel performance and implement any system of rewards and penalties related to vessel performance.

A set of contractual penalties for failure to comply with any cooperative requirements.

Each cooperative shall annually provide a report to the Council that includes the cooperative agreement and describes the cooperative's compliance with the specific requirements for cooperatives and the cooperative's performance with respect to those requirements (including salmon retention, gear innovations and fishing practices, vessel reporting requirements and hotspot identification and fishing limitations, vessel performance standards, information sharing, and monitoring). Cooperative reports shall also document any rewards or penalties related to vessel performance and any penalties for failure to comply with the cooperative agreement. The cooperative report should also describe the Chinook salmon bycatch seasonally, identifying any notable Chinook salmon bycatch occurrences or circumstances in the fishery. As a part of its report, a cooperative shall describe each measure adopted by the cooperative, the rationale for the measure (specifically describing how a measure is intended to serve the objective of addressing Chinook salmon PSC, while ensuring a fair opportunity to all participants in the fishery), and the effects of the measure.

In the event more than one cooperative is created, those cooperatives will be required to enter an intercooperative agreement prior to beginning fishing. The intercooperative agreement will establish rules to ensure that no cooperative (or its members) are disadvantaged in the fishery by its efforts to avoid Chinook salmon.

The parties to any intercooperative agreement shall annually provide report to the Council including the intercooperative agreement and describing each measure in the agreement, the rationale for the measure (specifically describing how a measure is intended to serve the objective of addressing Chinook salmon PSC, while ensuring a fair opportunity to all participants in the fishery), and the effect of the measure.

Hard caps and cooperatives

As the Council continues to develop this action, it will need to consider the interactive effects of the different alternatives. If the Council elects to include management of a hard cap (to create a fixed limit on Chinook salmon PSC) and a cooperative program (to create incentives for coordinated efforts to reduce Chinook salmon PSC), the interaction of the measures will need to be considered. The Council could follow one of two courses of action to implement any hard cap along with a cooperative program. It could either develop a system that divides the hard cap among participants (or cooperatives) or allow the participants to decide on any division of the hard cap, subject to certain limitations defined by the Council.

Division of any hard cap among cooperatives by the Council is likely to add substantially to the time needed to develop this action. Such a distribution of interests is analogous to a catch share system (or further definition of the limited entry system for the pollock fishery). The distribution of the hard cap is also likely to be complicated by the consideration of a variety of methods of determining the overall cap level and its division between the two regulatory areas. These sorts of distributions typically require expansive analysis, stakeholder and public comment, and Council deliberations.

If the Council elects to set a hard cap without defining a distribution of that cap among cooperatives within a regulatory area, cooperatives will be left to manage their fleets to comply with the cap. Cooperatives may choose either to attempt to manage to the cap or reach overall cap compliance through bycatch avoidance measures.

Allocation of the cap within a cooperative presents a particular dilemma for cooperative structuring. Specifically, if a cooperative has both established Gulf of Alaska pollock fishery participants with established fishing and bycatch histories and entrants with no (or very limited or dated) histories the division of the cap among participants is likely to be both controversial and sensitive, given the need to provide these entrants with a reasonable fishing opportunity and the need for the management to remain with the Council (rather than to be effectively deferred to the participants). Although precedents exist for the division of allocations among participants (such as the scallop cooperative and freezer longline cooperatives) those arrangements have occurred after extended negotiation among a well-defined, limited number of participants. This action will maintain the current number of eligible license holders, which is likely an unmanageable number for the type of negotiation needed to establish a cooperative arrangement to divide the any bycatch cap among participants. In addition, by allowing a structure that accommodates multiple cooperatives (which may be needed to ensure some choice among associations), an agreement concerning the division of the cap is even less probable. For example, it is possible that one cooperative

may agree to an internal division of the cap that applies a particular weight to historic bycatch usage, while a second cooperative may weight that history in an entirely different manner. These settlements would likely be based on an assumption concerning the amount of the total cap available to the cooperative, which may be entirely inconsistent with the assumed distribution of the other cooperative.

The recent experience in agreeing to the development of a Chinook salmon bycatch cap in the Bering Sea pollock fishery provides some insight into the process that could be used by cooperative members to negotiate division of a cap. That fishery is made up of a specifically-defined group of participants, each with an established pollock allocation. Yet, the introduction of the cap on Chinook bycatch led to an extended negotiation (over the course of a few years) concerning the division of that cap among cooperative members. In addition, the Bering Sea pollock fishery participants had several years of experience working with each other in a cooperative structure that likely proved useful in negotiations. Although the Gulf of Alaska fisheries have historically had fewer participants than the Bering Sea pollock fishery, several licenses eligible for the fisheries could enter the fishery. This potential entry creates uncertainty concerning the persons that must be included in a negotiation and could prevent the development of stability, as the participants in negotiations could change annually. This absence of a well-defined, consistent cooperative membership could prevent the development of a stable agreement on the division of a cap. Such a negotiating environment is particularly problematic for long term participants who have the most at stake in the fishery and are likely to be asked to make additional concessions annually by new entrants who may use the preceding year's agreement as the starting point for their negotiations. A further barrier to the development of a cooperative agreement that divides the cap among cooperative members is the uncertainties surrounding Chinook salmon bycatch. Bycatch rates have fluctuated greatly within and across years, seasons, and areas. These uncertainties are likely to make some participants reluctant to enter agreements that fully define the distribution of Chinook salmon bycatch (and could result in any fully defined annual distribution being perceived as unfair). For example, if Chinook bycatch is distributed randomly such that one in thirty vessels each year is likely to unavoidably catch a large number of Chinook salmon (say one-fifth of a cooperative's allocation), any complete annual distribution of the hard cap within the cooperative could be perceived as unfair, as the unfortunate vessel with the high Chinook salmon bycatch would likely be required to acquire others' distributions to cover an overage. Clearly, other cooperative measures may be available to address these circumstances, but a complete distribution of the cap is likely to be unsatisfactory to a substantial share of the fishery's participants. These factors, together, make it unlikely that cooperatives will desire to or reach an agreement to distribute a Chinook salmon bycatch cap among participants in the near future. In the long run, cooperatives and fishery participation may stabilize to a point that participants are able to negotiate a distribution of the hard cap among members, but such an agreement would likely take years to develop.

The alternative is for a cooperative to manage its fleet's behavior to avoid Chinook PSC in a manner that reduces any potential of reaching the hard cap. Measures that a cooperative might employ are those described above for general cooperative management (e.g., monitoring and hotspot time and area closures, gear modification incentives, and reward and penalty structures). Using these measures a

cooperative may attempt to control Chinook salmon bycatch and create incentives for Chinook salmon avoidance, which together might maintain bycatch within the cap level. These more general measures are likely to be more acceptable to the fleet, particularly until more participants develop better confidence in their individual abilities to affect (and control) Chinook PSC levels.

In a single cooperative fishery, that cooperative's members will be positioned to develop a set of rules that all of participants accept as a condition of their participation in the fishery. In a multiple cooperative fishery, the different cooperatives will be compelled to negotiate their own internal agreements, as well as an intercooperative agreement to ensure that no cooperative gains an unfair advantage over other cooperatives, as a result of the differences in the Chinook salmon bycatch avoidance measures across cooperatives. The potential for different cooperative's to have different preferences for different Chinook bycatch avoidance measures will complicate any negotiation of the terms of an intercooperative agreement, as the parties are likely to attempt to ensure that their positions in the fishery are not sacrificed by the differences. The existence of a binding hard cap could further complicate these negotiations, particularly as cooperatives perceive the potential for their pollock catch to be constrained by not only the pollock total allowable catch, but also by the Chinook salmon cap. A cooperative would need to balance its own measures against those of any competing cooperative to ensure that it has a fair opportunity in the fishery relative to the other cooperative, given the potential to reach either the pollock total allowable catch or the Chinook salmon PSC cap. One may be inclined to suggest that the intercooperative agreement could specify a division the cap between cooperatives, subjecting each cooperative to its own cap. Yet, in the absence of a Council specified division of the cap, the cooperatives would all continue to be bound by the overall cap. Consequently, for any such agreement to be reached either the cooperatives would need to have full confidence that the other cooperatives would effectively be able to avoid an overage of their shares of the cap or the agreement would need to include enforceable penalties for overages.³

While these factors may complicate negotiations of cooperative and intercooperative agreements under a system that includes both a cooperative structure and a Chinook salmon PSC cap, the cap would serve as an upper limit on Chinook PSC. In addition, the cooperative structure and the incentive for Chinook PSC reductions might complement the cap by creating an incentive for Chinook PSC reductions in periods when the cap is not (or is not likely to be) binding. In assessing the interactions of a hard cap with a cooperative alternative, the relatively brief seasons in the fishery should also be considered. The rate at which the fishery is prosecuted has presented a challenge to inseason managers for the last several years. The need to also manage the fishery to a Chinook PSC cap (particularly one based on extrapolated rates

³ It should be noted that the effects of a single cap governing multiple cooperatives would be compounded, if the Council were to develop an alternative that established a single Gulf-wide cap. As under a regulatory area cap, each cooperative would need to assess its own measures against those of other cooperatives. This assessment must consider the effectiveness of the measures on Chinook PSC rates. If a cap is applied Gulf-wide, a cooperative in one regulatory area must have confidence in its ability to assess the effects of measures on Chinook PSC rates adopted by cooperatives that fish only in other regulatory areas. The ability of a cooperative (through its members) to make such an assessment is not known, but is likely to be dependent on the overlap in participation across the two areas (and membership in cooperatives in the two areas).

within a partially observed fleet) could present even greater challenges. To the extent that cooperatives slow the rate of prosecution of the fishery, they may also facilitate more precise management of the fishery. Similarly, cooperative management provides an avenue for improved communication between the fleet and managers. This additional communication concerning the timing of effort in the fishery, pollock catch rates, and Chinook PSC rates could also benefit inseason managers' efforts to manager the fleet to the pollock total allowable catch and any Chinook PSC cap.

Conclusion

As the Council considers the development of a cooperative system for addressing Chinook salmon PSC avoidance, certain considerations should be kept in mind. Any cooperative system must afford all eligible license holders a reasonable fishing opportunity. To accommodate those opportunities, the Council should consider a structure that either allows multiple cooperatives to form or allows for fishing outside of a cooperative. In addition, if fishing outside of a cooperative is not permitted, cooperatives should be required accept any eligible license holder as a member and must not disadvantage persons without history in the fishery. A cooperative system could prove useful in developing Chinook salmon avoidance measures, as cooperatives may not only facilitate improved information concerning Chinook salmon bycatch in the fishery, but also may be able to quickly respond to that information to reduce Chinook salmon bycatch. A Chinook PSC hard cap is likely to complicate the development of cooperative (and intercooperative) agreements; yet, a hard cap does serve a fundamentally different purpose, which may complement the cooperative structure.

C-3(b) GOA Chinook Salmon Bycatch
February 5, 2011

The Council adopts the below purpose and need statement and revised alternatives for initial review in April, anticipating the selection of a preliminary preferred alternative in April. Additions to the Council's December 2010 alternatives are underlined and deletions are shown in strikethrough with the exception of Alternative 3, which was replaced with language provided in the discussion paper on cooperatives unless otherwise noted.

Problem statement:

Magnuson-Stevens Act National Standards require balancing optimum yield with minimizing bycatch and minimizing adverse impacts to fishery dependent communities. Chinook salmon bycatch taken incidentally in GOA pollock fisheries is a concern, historically accounting for the greatest proportion of Chinook salmon taken in GOA groundfish fisheries. Salmon bycatch control measures have not yet been implemented in the GOA, and 2010 Chinook salmon bycatch levels in the area were unacceptably high. Limited information on the origin of Chinook salmon in the GOA indicates that stocks of Asian, Alaska, British Columbia, and lower-48 origin are present, including ESA-listed stocks.

The Council is considering several management tools for the GOA pollock fishery, including a hard cap and cooperative approaches with improved monitoring and sampling opportunities to achieve Chinook salmon prohibited species catch (PSC) reductions. Management measures are necessary to provide immediate incentive for the GOA pollock fleet to be responsive to the Council's objective to reduce Chinook salmon PSC.

Alternatives:

Alternative 1: Status quo.

Alternative 2: Chinook salmon PSC limit and increased monitoring.

Component 1: PSC limit: 15,000, 22,500, or 30,000 Chinook salmon PSC limit (~~hard cap~~). The PSC limit may be exceeded by up to 25 percent one out of three consecutive years. If the PSC limit is exceeded in one year, it may not be exceeded for the next two consecutive years.

Option: Apportion limit between Central and Western GOA

- a) proportional to the historical pollock TAC (2006-2010 or 2001-2010 average).
- b) ~~proportional to historic average bycatch rate of Chinook salmon (5 or 10 year average).~~
- eb) proportional to historical average bycatch number of Chinook salmon (~~5~~ 2006-2010 or ~~10 year~~ 2001-2010 average).
- c) as a combination of options (a) and (b) at a ratio of a:b equal to

Suboption i: 25:75

Suboption ii: 50:50

Suboption iii: 75:25

Central and Western GOA PSC limits and the 25 percent buffer would be managed by area (measures to prevent or respond to an overage would be applied at the area level, not Gulf-wide).

Chinook salmon PSC limits shall be managed by NMFS in-season similar to halibut PSC limits.

C-3(b) GOA Chinook Salmon Bycatch
February 5, 2011

If a Chinook salmon PSC limit is implemented midyear in the year of implementation, an amount should be deducted from the annual PSC limit in that year. The deduction should be equal to the contribution that would have been made based on historical averages (selected above) in the seasons preceding implementation.

Component 2: Expanded observer coverage:

Extend existing 30% observer coverage requirements for vessels 60'-125' to trawl vessels less than 60' directed fishing for pollock in the Central or Western GOA.

Alternative 3: Mandatory salmon bycatch control cooperative membership.

To be eligible to participate in the Central Gulf of Alaska or Western Gulf of Alaska pollock fishery, the holder of an appropriately endorsed License Limitation Program license would be required to join a Chinook salmon bycatch control cooperative.

Each cooperative would be formed for participation in a single regulatory area (e.g., Central Gulf of Alaska or Western Gulf of Alaska).

To form, a cooperative is required to have more than:

- a) 25 percent; or
- b) 33 percent;

of the licenses that participated in the applicable regulatory area in the preceding year.

Any cooperative is required to accept as a member any eligible person, subject to the same terms and conditions that apply to all other cooperative members. In addition, the cooperative agreement shall not disadvantage any eligible person entering the fishery for not having an established Chinook salmon bycatch history in the fishery.

Each cooperative agreement shall contain:

A requirement that all vessels retain all salmon bycatch until the plant observers have an opportunity to determine the number of salmon and collect scientific data and biological samples.

Vessel reporting requirements to be used to identify salmon hotspots and an appropriate set of measures to limit fishing in identified hotspots.

A system of information sharing intended to provide vessels with timely information concerning Chinook salmon bycatch rates.

A monitoring program to:

- ensure compliance with the full retention requirement,
- catalogue gear use and fishing practices and their effects on Chinook bycatch rates,
- ensure compliance with vessel reporting requirements and limits on fishing under the system of salmon hotspots,
- determine compliance with any measures that require use of fishing gear or practices to avoid Chinook salmon PSC, and
- verify vessel performance and implement any system of rewards and penalties related to vessel performance.

C-3(b) GOA Chinook Salmon Bycatch

February 5, 2011

A set of contractual penalties for failure to comply with any cooperative requirements.

Cooperative agreements may also contain the following measures:

Measures to promote gear innovations and the use of gear and fishing practices that contribute to Chinook salmon avoidance.

A system of vessel performance standards that creates individual incentives for Chinook salmon avoidance, which could include rewards or penalties based on Chinook salmon bycatch.

Cooperatives may have no measures except those specifically authorized by this action (and shall not include any measures that directly allocate access^{to} any portion of the total allowable catch or any PSC limit).

Each cooperative shall annually provide a report to the Council that includes the cooperative agreement and describes the cooperative's compliance with the specific requirements for cooperatives and the cooperative's performance with respect to those requirements (including salmon retention, gear innovations and fishing practices, vessel reporting requirements and hotspot identification and fishing limitations, vessel performance standards, information sharing, and monitoring). Cooperative reports shall also document any rewards or penalties related to vessel performance and any penalties for failure to comply with the cooperative agreement. The cooperative report should also describe the Chinook salmon bycatch seasonally, identifying any notable Chinook salmon bycatch occurrences or circumstances in the fishery. As a part of its report, a cooperative shall describe each measure adopted by the cooperative, the rationale for the measure (specifically describing how a measure is intended to serve the objective of addressing Chinook salmon PSC, while ensuring a fair opportunity to all participants in the fishery), and the effects of the measure.

In the event more than one cooperative is created within a regulatory area, those cooperatives will be required to enter an intercooperative agreement prior to beginning fishing. The intercooperative agreement will establish rules to ensure that no cooperative (or its members) are disadvantaged in the fishery by its efforts to avoid Chinook salmon.

The parties to any intercooperative agreement shall annually provide report to the Council including the intercooperative agreement and describing each measure in the agreement, the rationale for the measure (specifically describing how a measure is intended to serve the objective of addressing Chinook salmon PSC, while ensuring a fair opportunity to all participants in the fishery), and the effect of the measure.

The requirement for salmon PSC to be discarded at sea would not apply to directed GOA pollock fishing.

The Council intends to advance both a PSC limit and mandatory bycatch cooperatives as a preliminary preferred alternative and requests the agency begin scheduling to accommodate both alternatives as quickly as practicable.