

## CHUM SALMON BYCATCH DISCUSSION PAPER

OCTOBER 2008

At the April 2008 Council meeting, the Council took action to bifurcate the analysis of management measures for Chinook and chum salmon to evaluate separately. The EIS/RIR/IRFA for the Chinook salmon management measures analysis was presented for initial review in June 2008 and staff are currently working on revising that analysis for the public review draft. Final action on the Chinook salmon bycatch management measures is scheduled for April 2009.

For Chum salmon bycatch management measures, the Council modified the existing suite of alternatives (see attached April 2008 Council motion for Action 2: Non-Chinook) and indicated that further review and modification would be scheduled for the October 2008 Council meeting.

At this meeting, the Council will review the current suite of alternatives for Chum (Non-Chinook) salmon bycatch in the EBS pollock trawl fishery as amended in April 2008. The Council may modify the alternatives at this time and discuss an appropriate timeline for this analysis. Information contained in this paper summarizes the current bycatch trends by season and sector through August 2008, the current suite of alternatives and considerations for the subsequent analysis with respect to appropriate NEPA analyses necessary as well as staff timing and availability.

### **TRENDS IN NON-CHINOOK (CHUM) BYCATCH**

For catch accounting and PSC limits 4 species of salmon (Sockeye, Coho, Pink and Chum) are aggregated into an 'other salmon' or non-Chinook salmon species category. Chum salmon comprises over 99.6% of the total catch in this category (Table 1).

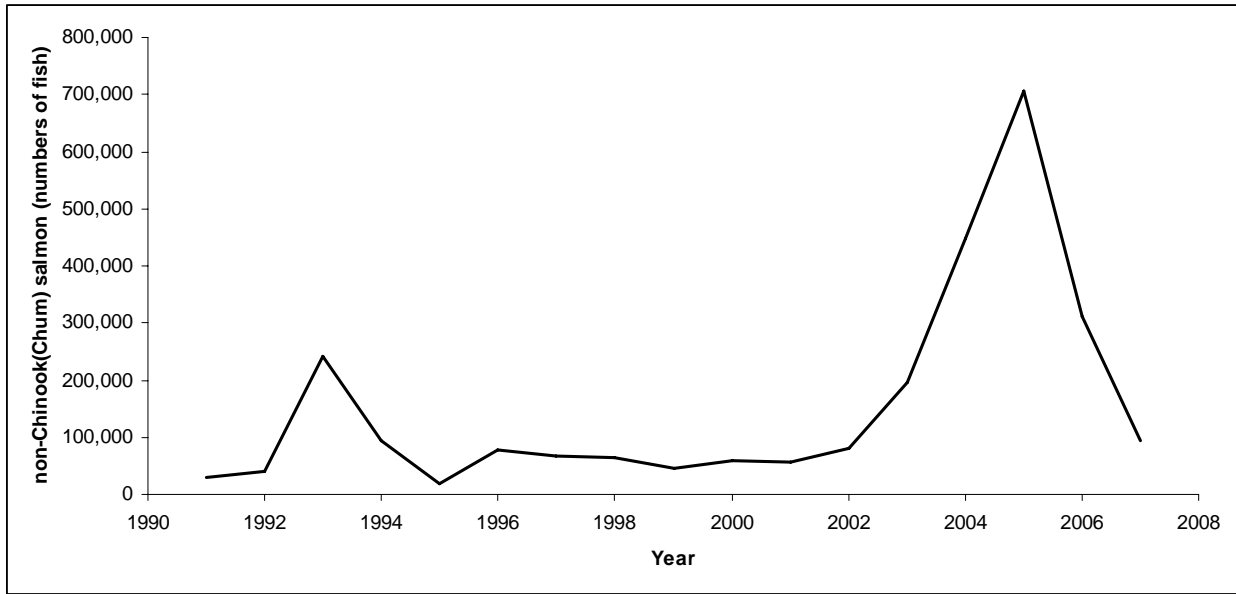
The majority of non-Chinook bycatch occurs in the pollock trawl fishery. Historically, the contribution of non-Chinook bycatch from the pollock trawl fishery has ranged from a low of 88% of all bycatch to a high of >99.5% in 1993. Since 2002 bycatch of non-Chinook salmon in the pollock fishery has comprised over 95% of the total. Total catch of non-Chinook salmon in the pollock fishery reached an historic high in 2005 at 705,963 fish (Table 2; Figure 1). Bycatch of non-Chinook salmon in this fishery occurs almost exclusively in the B season. Bycatch since 2005 has declined substantially, with the 2007 total of 94,072.

Bycatch rates for chum salmon (chum salmon/mt of pollock) from 1991-2007 are shown in Figure 2. Currently the Chum Salmon Savings Area as shown in Figure 2 is invoked in the month of August annually and when triggered in September, however the fleet is exempt from these closures under regulations for the salmon bycatch reduction intercooperative agreement implemented in 2007 under Amendment 84.

**Table 1. Composition of bycatch by species in the non-Chinook salmon category from 2001-2007**

Year	sockeye	coho	pink	chum	Total	% chum
2001	12	173	9	51,001	51,195	99.6%
2002	2	80	43	66,244	66,369	99.8%
2003	29	24	72	138,772	138,897	99.9%
2004	13	139	107	352,780	353,039	99.9%
2005	11	28	134	505,801	505,974	100.0%
2006	11	34	235	221,965	222,245	99.9%
2007	3	139	39	75,249	75,430	99.8%

\*source NMFS catch accounting, extrapolated from sampled hauls only

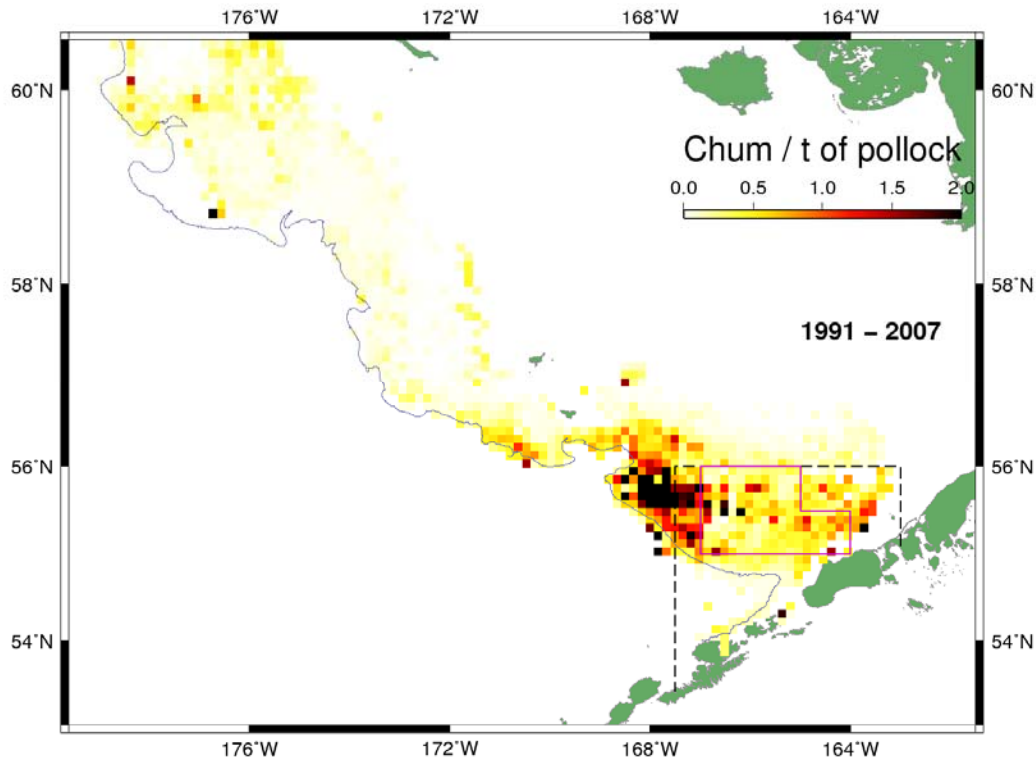


**Figure 1. Non-Chinook salmon bycatch in the EBS pollock trawl fishery 1991-2007. Note 1991-1993 values do not include CDQ.**

**Table 2. Non-Chinook salmon catch (numbers of fish) in the BSAI pollock trawl fishery (all sectors) 1991-2008, CDQ is indicated separately and by season where available. ‘na’ indicates that data were not available in that year.**

Year	Annual with CDQ	Annual without CDQ	Annual CDQ only	A season	B season	A season	B season	A season	B season
				With CDQ		Without CDQ		CDQ only	
1991	Na	28,951	na	na	na	2,850	26,101	na	na
1992	na	40,274	na	na	na	1,951	38,324	na	na
1993	na	242,191	na	na	na	1,594	240,597	na	na
1994	92,672	81,508	11,165	3,991	88,681	3,682	77,825	309	10,856
1995	19,264	18,678	585	1,708	17,556	1,578	17,100	130	456
1996	77,236	74,977	2,259	222	77,014	177	74,800	45	2,214
1997	65,988	61,759	4,229	2,083	63,904	1,991	59,767	92	4,137
1998	64,042	63,127	915	4,002	60,040	3,914	59,213	88	827
1999	45,172	44,610	562	362	44,810	349	44,261	13	549
2000	58,571	56,867	1,704	213	58,358	148	56,719	65	1,639
2001	57,007	53,904	3,103	2,386	54,621	2,213	51,691	173	2,930
2002	80,652	77,178	3,474	1,377	79,274	1,356	75,821	21	3,453
2003	195,135	186,779	8,356	3,946	191,189	3,709	183,070	237	8,119
2004	447,626	437,429	10,197	438	447,187	409	437,019	29	10,168
2005	705,963	698,270	7,693	599	705,364	567	697,703	32	7,661
2006	310,545	309,343	1,202	2,525	308,020	2,460	306,883	65	1,137
2007	94,072	87,592	6,480	8,546	85,526	7,390	80,202	1,156	5,324
2008	8,685	8,444	241	na	na	na	na	na	na

2008 data through 8/23/08



**Figure 2. Historical chum B-season bycatch rates 1991-2007. Note the Chum Salmon Savings Area closure (solid line) and the Catcher Vessel Operational Area (dotted line).**

Bycatch by sector from 1997-2008 (to date) is summarized in Table 3. Annual percentage contribution to the total amount by year and sector (non-CDQ) from 1997-2007 is summarized in Table 4.

**Table 3 Non-Chinook bycatch in the EBS pollock trawl fishery 1997-2008 by sector. CP = catcher processor, M= Mothership, S = Shoreside catcher vessel fleet. CDQ where available is listed separately by the sector in which the salmon was caught. For confidentiality reasons CDQ catch by sector in 2008 to date cannot be listed separately. Source NMFS catch accounting (data queries run on 2/10/08 through 2007 and 8/23/08 for 2008**

Year	CP	M	S	CP-CDQ	M-CDQ	S-CDQ	Total
1997	23,131	15,018	23,610	3,663	297	269	65,988
1998	8,119	6,750	49,173	na	na	na	64,042
1999	2,312	212	42,087	326	185	150	45,271
2000	4,930	509	51,428	1,161	287	256	58,571
2001	20,356	8,495	25,052	1,950	1,153	0	57,007
2002	9,303	13,873	54,002	2,051	1,423	0	80,652
2003	22,831	11,895	152,053	6,049	2,307	0	195,135
2004	76,159	13,330	347,940	8,257	1,940	0	447,626
2005	63,266	15,314	619,691	3,136	4,557	0	705,963
2006	18,180	2,013	289,150	929	273	0	310,545
2007	27,245	5,427	54,920	2,840	3,640	0	94,071
2008*	1,074	317	7,162	--	--	--	8,444

\*through 8/23/08

**Table 4 Percent of total annual non-Chinook salmon catch by sector by year 1997-2007 (CDQ not included in sector totals) CP = catcher processor, M= Mothership, S = Shoreside catcher vessel fleet.**

Year	CP	M	S
1997	35%	23%	36%
1998	13%	11%	77%
1999	5%	0%	93%
2000	8%	1%	88%
2001	36%	15%	44%
2002	12%	17%	67%
2003	12%	6%	78%
2004	17%	3%	78%
2005	9%	2%	88%
2006	6%	1%	93%
2007	29%	6%	58%

## **HATCHERY RELEASES OF CHUM**

Commercial salmon fisheries exist around the Pacific Rim with most countries releasing salmon fry in varying amounts by species. The North Pacific Anadromous Fish Commission summarizes information on hatchery releases by country and by area where available. Reports submitted to the NPAFC were used to summarize hatchery information by Country and by US state below (Table 5, Table 6). For more information see the following: Russia (Anon., 2007; TINRO-centre 2006; 2005); Canada (Cook and Irvine, 2007); USA (Josephson, 2007; Eggers, 2006; 2005; Bartlett, 2007; 2006; 2005); Korea (SRT 2005, 2006). Chum salmon hatchery releases by country are shown below in Table 5.

For chum salmon, Japanese hatchery releases far exceed releases by any other Pacific Rim country. This is followed by the US and Russia. A further break-out of hatchery releases by area in the US show that the majority of chum salmon fry releases occur in the Alaska region (Table 6).

Combined Asian hatchery releases in 2006 (Russia, Japan, Korea) account for 76% of the total releases while Alaskan chum releases account for 24% of the total releases. Chum enhancement projects in Alaska are not active in the AYK region.

**Table 5. Hatchery releases of juvenile chum salmon in millions of fish.**

Year	Russia	Japan	Korea	Canada	US	Total
1999	278.7	1867.9	21.5	172.0	520.8	2,860.9
2000	326.1	1817.4	19.0	124.1	546.5	2,833.1
2001	316.0	1831.2	5.3	75.8	493.8	2,722.1
2002	306.8	1851.6	10.5	155.3	507.2	2,831.4
2003	363.2	1840.6	14.7	136.7	496.3	2,851.5
2004	363.1	1817.0	12.9	105.2	630.2	2,928.4
2005	387.3	1844.0	10.9	131.8	596.9	2,970.9
2006	344.3	1858.0	7.3	107.1	578.8	2,895.5
2007	*	*	13.8	*	*	

\*2007 data not yet available

**Table 6. US west coast hatchery releases of juvenile chum salmon in millions of fish**

Year	Alaska	Washington	Oregon	California	Idaho	Combined WA/OR/CA/ID	Total
1999	460.9	59.9	0	0	0		520.8
2000	507.7	38.8	0	0	0		546.5
2001	465.4	28.4	0	0	0		493.8
2002	450.8	56.4	0	0	0		507.2
2003	435.6	60.7	0	0	0		496.3
2004	578.5					51.7	630.2
2005	549.0					47.9	596.9
2006	541.2					37.6	578.8

## **STOCK OF ORIGIN INFORMATION FOR CHUM BYCATCH**

A study conducted by the National Marine Fisheries Service evaluated bycatch samples of chum salmon from the 1994-1995 pollock trawl fishery in the Eastern Bering Sea and employed genetic stock identification (GSI) methodology to evaluate the stock composition of these bycaught fish (Wilmot et al., 1998). Results from this study indicated that in 1994 between 39-55% of samples were of Asian origin, 20-35% were western Alaskan stocks, and 21-29% were from the combined Southeastern Alaska, British Columbia and Washington stocks. (Wilmot et al., 1998). The 1995 samples indicated a range of 13-51% Asian, 33-53% western Alaska, and 9-46% Southeastern Alaska, British Columbia or Washington stocks (Wilmot et al., 1998). Estimates for immature versus maturing fish differed with both years indicating that maturing fish indicating a higher contribution from BC than the contribution from the immature fish

(Wilmot et al., 1998). Differences in relative stock composition also varied temporally throughout the B season and by region (Wilmot et al. 1998). Additional work is currently underway at the Auke Bay Laboratory to evaluate more recent chum bycatch samples from the pollock fishery for stock composition estimates. Results will likely be available in late 2008.

Additional studies of research trawl caught fish in the Bering Sea have looked at the origin and distribution of chum salmon (Urawa et al. 2004;). Genetic stock identification (GSI) with allozyme variation was used to determine the stock origin of chum salmon caught by a trawl research vessel operating in the central Bering Sea from late August to mid September 2002 (Urawa et al. 2004). Results indicated that the estimated stock composition for maturing chum salmon was 70% Japanese, 10% Russian and 20% North American stocks, while immature fish were estimated as 54% Japanese, 33% Russian, and 13% North American (Urawa et al. 2004). Stock composition of North American fish was identified for Northwest Alaska, Yukon, Alaskan Peninsula/Kodiak, Susitna River, Prince William Sound, Southeast Alaska/Northern British Columbia and Southern British Columbia/Washington State. Of these the majority of mature chum salmon for North America stocks came from Southern BC/Washington State and Alaska Peninsula/Kodiak (Urawa et al. 2004). For immature chum salmon, the largest contribution for North American stocks came from Southeast Alaska/Northern BC, followed by Alaska Peninsula/Kodiak and Southern BC/Washington State.

## **DESCRIPTION OF NON-CHINOOK SALMON (CHUM) ALTERNATIVES**

The following alternatives are currently under consideration by the Council. The alternative description below includes all amendments made at the April 2008 Council meeting<sup>1</sup>.

### **1.1 Alternative 1: Status Quo (non-Chinook)**

Alternative 1 retains the current program of Chum Salmon Savings Area (SSA) closures triggered by separate non-CDQ and CDQ caps by species with the fleet's exemption to these closures per regulations for Amendment 84.

For chum salmon, the Chum Salmon Savings Area was established in 1994 by emergency rule, and then formalized in the BSAI Groundfish FMP in 1995 under Amendment 35 (ADF&G 1995b). This area is closed to pollock trawling from August 1 through August 31. Additionally, if 42,000<sup>2</sup> 'other' salmon are caught in the Catcher Vessel Operational Area (CVOA) during the period August 15-October 14, the area remains closed to pollock trawling for the remainder of the period September 1 through October 14 in the Chum Salmon Savings Area. As catcher processors are prohibited from fishing in the CVOA during the "B" season, unless they are participating in a CDQ fishery, only catcher vessels and CDQ fisheries are affected by the PSC limit.

Amendment 84 to the BSAI groundfish FMP exempted vessels from both the Chum and Chinook SSAs if triggered provided they participate in the salmon bycatch inter-cooperative agreement (ICA) with the voluntary rolling hot spot (VRHS) system.

Under the status quo, the CDQ Program would continue to receive allocations of 10.7 percent of the non-Chinook salmon PSC limit as "prohibited species quota reserves" or PSQ reserves. The PSQ reserves are further allocated among the six CDQ groups based on percentage allocations approved by NMFS on

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<sup>1</sup> Note that the option 2 'cap set relative to salmon returns' as indicated in the original motion has been deleted here for consistency with discussion at the June 2008 Council meeting regarding the infeasibility of applying this cap framework at this time to salmon species.

<sup>2</sup> This number is inclusive of the allocation to CDQ groups. Non-CDQ 'other salmon' limit is 38,850.

August 8, 2005. The salmon savings areas would continue to be closed to vessels directed fishing for pollock CDQ for a particular CDQ group when that group's salmon PSQ is reached. The CDQ groups would continue to be exempt from the salmon savings area closures if they participate in the salmon bycatch intercooperative agreement.

## **1.2 Alternative 2: Hard Cap (non-Chinook)**

This alternative would establish a non-Chinook salmon bycatch cap on the pollock fishery which, when reached would require all directed pollock fishing to cease. Only those non-Chinook caught by the directed pollock fleet would accrue towards the cap and fishery closures upon achieving the cap would apply only to directed fishing for pollock.

In order to select this alternative, the Council must choose one of the options under Component 1, Hard Cap Formulation (see below). If the Council does not select any options under the further components, Alternative 2 would be applied at the fishery level, as a single hard cap to all combined sectors. The CDQ Program would receive an allocation of 10.7% of any hard cap established for non-Chinook salmon in the BS. The CDQ allocation would be further allocated among the six CDQ groups based on percentage allocations currently in effect. Each CDQ group would be prohibited from exceeding its non-Chinook salmon allocation. This prohibition would require the CDQ group to stop directed fishing for pollock CDQ once its cap is reached because further directed fishing for pollock would likely result in exceeding the cap.

The remaining 89.3% of the hard cap would be allocated to the non-CDQ sectors (inshore catcher vessel sector, offshore catcher processor sector, and mothership sector) combined. All bycatch of non-Chinook salmon by any vessels in any of these three sectors would accrue against the cap, and once the cap was reached, NMFS would prohibit directed fishing for pollock by all three of these sectors at the same time.

If the hard cap is to be subdivided by sector (under Component 2), two options are provided for the allocation. Options for sector transfer are included in Component 3. Further subdivision of an inshore sector cap to individual inshore cooperatives is discussed under Component 4 (cooperative provisions).

### **1.2.1 Component 1: Hard Cap Formulation**

Component 1 would establish a hard cap number based upon averages of historical numbers and other considerations as noted below. Component 1 sets the formulation for the overall cap: this can be either applied to the fishery as a whole, or applying Components 2 and 4 may be subdivided by sector (Component 2) and to cooperative (Component 4).

#### **Option 1: Range of numbers for hard cap formulation**

A range of numbers is established for consideration as hard caps for non-Chinook salmon. Table 5 lists the numbers in numerical order lowest to highest for overall caps. Here the CDQ allocation of the cap is 10.7% of the total cap, with the remainder for the combined non-CDQ fishery.

**Table 7 Range of suboptions for hard cap for non-Chinook with breakout for CDQ allocation (10.7%) and remainder for non-CDQ fleet**

Sub Option	Non-Chinook	CDQ	Non-CDQ
i)	58,176	6,225	51,951
ii)	76,252	8,159	68,093
iii)	147,204	15,751	131,453
iv)	203,080	21,730	181,350
v)	220,614	23,606	197,008
vi)	347,984	37,234	310,750
vii)	488,045	52,221	435,824

The following section provides the originating rationale (by suboption number) for each cap number listed in Table 7. Suboption i-ii (58,176 and 76,252, the low end of the range of caps considered) represent the 5 year average from 1997-2001 (i) and the 10 year average 1992-2001 (suboption ii). These year combinations were chosen specifically in an attempt to be responsive to considerations relative to bycatch levels prior to accession to the Yukon River Agreement (signed in 2002).

Suboptions iii-vii refer to average bycatch numbers by the pollock pelagic trawl fishery over a range of historical year combinations from 1997 through 2006, dropping some years over the period under consideration in some options. Suboption iii) is the 10 year average (1997-2006) with the highest year (2005) dropped from the years over which average occurred while suboption iv) is the 10 year average (1997-2006) with the lowest year (1999) dropped from the years over which average occurred. Suboption v) is the straight 10 year average (including all years 1997-2006), vi) is the 5 year average (2002-2006) and vii) is the three year average for the most years under consideration (2004-2006).

For analytical purposes the following range of numbers will be utilized:

**Table 8 Range of non-Chinook salmon caps for use in the analysis of impacts.**

	Non-Chinook	CDQ	Non-CDQ
i)	58,000	6,206	51,794
ii)	206,300	22,074	184,226
iii)	353,000	37,771	315,229
iv)	488,000	52,216	435,784

#### **1.2.1.1.1 Suboption: Periodic adjustments to cap based on updated bycatch information.**

Under this suboption, the Council will reassess updated salmon bycatch information after a certain number of years and determine if adjustments to the hard cap implemented under this action are needed. If the Council selects this option, it would specify when the reassessment of salmon bycatch information would occur. Any revisions to the salmon bycatch management measures would require additional analysis and rulemaking. The Council may reassess any management measure at any time and does not need to specify a particular time for reassessment of the salmon bycatch management measures.

#### **1.2.2 Component 2: Sector Allocation**

If this component is selected, the hard cap would be managed at the sector level for the fishery. This would result in separate sector level caps for the CDQ sector, the inshore catcher vessel (CV) fleet, the mothership fleet and the offshore catch processor (CP) fleet. The catch of salmon would be tabulated on a sector level basis, and if the total catch in that sector reaches the cap specified for that sector, NMFS would close directed fishing for pollock by that sector for the remainder of the season. The remaining



sectors may continue to fish unless they too reach their specific sector level cap. Options for hard caps are as specified under component 1, options 1 and 2. However using each of those options (and suboptions) for cap formulation, the cap is then subdivided into sector level caps according to the following formulas:

Divide the final cap by sectors based on:

**Option 1)** 10% of the cap to the CDQ sector, and the remaining allocated as follows: 50% inshore CV fleet; 10% for the mothership fleet; and 40% for the offshore CP fleet.

This option is intended to follow the percentage allocation established for pollock under the AFA. Application of these percentages results in the following range of caps by sector, based upon the range of caps in component 1, option 1. Note that here the CDQ allocation of salmon is slightly lower than that assumed as a default under component 1 (10% rather than 10.7%).

**Table 9 Sector split caps resulting from option 1 percentage allocation: 10% CDQ and the remaining 90% divided 50% inshore CV fleet; 10% for mothership fleet; 40% for the offshore CP fleet**

**Option 1) Sector level caps**

Sub Option	Fishery cap #s Non- Chinook	CDQ	Inshore CV	Mothership	Offshore CPs
i)	58,176	5,818	26,179	5,236	20,943
ii)	76,252	7,625	34,313	6,863	27,451
iii)	147,204	14,720	66,242	13,248	52,993
iv)	203,080	20,308	91,386	18,277	73,109
v)	220,614	22,061	99,276	19,855	79,421
vi)	347,984	34,798	156,593	31,319	125,274
vii)	488,045	48,805	219,620	43,924	175,696

For analytical purposes the following ranges will be utilized (Table 10):

**Table 10 Range of sector level non-Chinook caps for use in the analysis of alternatives**

	Non- Chinook	CDQ	Inshore CV	Mothership	Offshore CPs
i)	58,000	5,800	26,100	5,220	20,880
ii)	201,300	20,130	90,585	18,117	72,468
iii)	345,000	34,500	155,250	31,050	124,200
iv)	488,000	48,800	219,600	43,920	175,680

**Option 2)** Historical average of percent bycatch by sector based on:

- a) 3 year (2004-2006) average CDQ 1%; inshore CV fleet 86%; mothership fleet 2%; offshore CP fleet 11%
- b) 5 year (2002-2006) average: CDQ 2%; inshore CV fleet 84%; mothership fleet 3%; offshore CP fleet 11%.
- c) 10 year (1997-2006) average: CDQ 2%; inshore CV fleet 82%; mothership fleet 4%; offshore CP fleet 12%.

Under option 2, the subdivision of caps to each sector is now based upon historical average percent bycatch by sector over 3, 5 and 10 year time periods.

**Option 2a** uses the historical averages of percent bycatch by sector from the most recent time period under consideration in this analysis (2004-2006). This results in the following average percentages by sector: CDQ 1%; shore-based CV fleet 86%; mothership fleet 2%; offshore CP fleet 11%. Those percentages are applied to the range of caps under consideration in component 1, option 1 (Table 11).

**Table 11 Sector level caps based upon historical average percent bycatch from 2004-2006 (option 2a)**

**Option 2a) Sector level caps (2004-2006 average)**

Sub Option	Fishery cap #s Non-Chinook	CDQ 1%	Inshore CV 86%	Mothership 2%	Offshore CPs 11%
i)	58,176	582	50,031	1,164	6,399
ii)	76,252	763	65,577	1,525	8,388
iii)	147,204	1,472	126,595	2,944	16,192
iv)	203,080	2,031	174,649	4,062	22,339
v)	220,614	2,206	189,728	4,412	24,268
vi)	347,984	3,480	299,266	6,960	38,278
vii)	488,045	4,880	419,719	9,761	53,685

For analytical purposes the following range of sector split caps would be utilized for this option:

**Table 12 Range of sector level caps (option 2a) for use in the analysis of impacts**

	Non-Chinook	CDQ	Inshore CV	Mothership	Offshore CPs
i)	58,000	580	49,880	1,160	6,380
ii)	201,300	2,013	173,118	4,026	22,143
iii)	345,000	3,450	296,700	6,900	37,950
iv)	488,000	4,880	419,680	9,760	53,680

**Option 2b** considers the historical averages of percent bycatch by sector from the 5 year time period (2002-2006). This results in the following average percentages by sector: CDQ 2%; inshore CV fleet 84%; mothership fleet 3%; offshore CP fleet 11%. Those percentages are applied to the range of caps under consideration in component 1, option 1 (Table 13).

**Table 13 Sector level caps based upon historical average percent bycatch from 2002-2006 (option 2b)**

**Option 2b) Sector level caps (2002-2006 average)**

Sub Option	Fishery cap #s Non-Chinook	CDQ 2%	Inshore CV 84%	Mothership 3%	Offshore CPs 11%
i)	58,176	1,164	48,868	1,745	6,399
ii)	76,252	1,525	64,052	2,288	8,388
iii)	147,204	2,944	123,651	4,416	16,192
iv)	203,080	4,062	170,587	6,092	22,339
v)	220,614	4,412	185,316	6,618	24,268
vi)	347,984	6,960	292,307	10,440	38,278
vii)	488,045	9,761	409,958	14,641	53,685

For analytical purposes the following range of sector split caps for this option would be utilized (Table 14):

**Table 14 Range of sector level non-Chinook salmon caps (option 2b) for use in the analysis of impacts**

	Non-Chinook	CDQ	Inshore CV	Mothership	Offshore CPs
i)	58,000	1,160	48,720	1,740	6,380
ii)	201,300	4,026	169,092	6,039	22,143
iii)	345,000	6,900	289,800	10,350	37,950
iv)	488,000	9,760	409,920	14,640	53,680

**Option 2c** considers the historical averages of percent bycatch by sector from the 10 year time period (1997-2006). This results in the following average percentages by sector: CDQ 2%; inshore CV fleet 82%; mothership fleet 4%; offshore CP fleet 12%. Those percentages are applied to the range of caps under consideration in component 1, option 1 (Table 15).

**Table 15 Sector level caps based upon historical percent bycatch from 1997-2006 (option 2c)****Option 2c) Sector level caps (1997-2006 average)**

Sub Option	Fishery cap #s	CDQ	Inshore CV	Mothership	Offshore CPs
	Non-Chinook	2%	82%	4%	12%
i)	58,176	1,164	47,704	2,327	6,981
ii)	76,252	1,525	62,527	3,050	9,150
iii)	147,204	2,944	120,707	5,888	17,664
iv)	203,080	4,062	166,526	8,123	24,370
v)	220,614	4,412	180,903	8,825	26,474
vi)	347,984	6,960	285,347	13,919	41,758
vii)	488,045	9,761	400,197	19,522	58,565

For analytical purposes the following range of sector split caps for this option will be utilized:

**Table 16 Range of sector level non-Chinook caps for use in the analysis of impacts (option 2c)**

	Non-Chinook	CDQ	Inshore CV	Mothership	Offshore CPs
i)	58,000	1,160	47,560	2,320	6,960
ii)	201,300	4,026	165,066	8,052	24,156
iii)	345,000	6,900	282,900	13,800	41,400
iv)	488,000	9,760	400,160	19,520	58,560

**1.2.3 Component 3: Sector Transfer**

Options under this component may be selected only if the Council recommends allocating salmon bycatch among the sectors under Component 2.

If the Council does recommend salmon bycatch allocations to the sectors under Component 2 but does not select one of these options, the salmon bycatch available to each sector could not change during the year and NMFS would close directed fishing for pollock once each sector reached its Chinook salmon bycatch allocation. The CDQ allocations would continue to be managed as they are under status quo, with further allocation of the salmon bycatch cap among the six CDQ groups, transferable allocations within the CDQ Program, and a prohibition against a CDQ group exceeding its salmon bycatch allocation.

Options 1 and 2 are mutually exclusive, which means that the Council may select Option 1 to allow transferable salmon bycatch allocations at the sector level or Option 2 to require NMFS to manage the reapportionment of salmon bycatch from one sector to another.

### 1.2.3.1 Option 1: Transferable salmon bycatch caps

**Option 1)** Transfer salmon bycatch among sectors (industry initiated)

**Suboption:** Limit transfers to the following percentage of salmon that is available to the transferring entity at the time of transfer:

- a) 50%
- b) 70%
- c) 90%

If a transferring entity had completed all of its pollock harvest with some salmon remaining, it could only transfer up to a specified percent of that salmon bycatch to another entity with pollock still remaining for harvest. Under this circumstance, this transfer provision would mean that not all salmon bycatch allocated would be available for use by entities other than the original recipient of the allocation.

Transfers are voluntary requests, initiated by the entity receiving a salmon bycatch cap, for NMFS to move a specific amount of a salmon bycatch cap from one entity to another entity.

Option 1 would require that each sector receiving a transferable salmon bycatch cap be represented by a legal entity that could:

- represent all vessels eligible to participate in the particular AFA sector and receive an annual permit for a specific amount of salmon bycatch on behalf of all of those vessels,
- be authorized by all members of the sector to transfer all or a portion of the sector's salmon bycatch cap to another sector or to receive a salmon bycatch transfer from another sector on behalf of the members of the sector,
- be responsible for any penalties assessed for exceeding the sector's salmon bycatch cap (i.e., have an agent for service of process with respect to all owners and operators of vessels that are members of the legal entity).

Once transferable salmon bycatch hard caps are allocated to a legal entity representing an AFA sector or to a CDQ group, NMFS does not actively manage these allocations. Each entity receiving a transferable hard cap would be prohibited from exceeding that cap and would be responsible to control its pollock fishing to prevent exceeding its salmon bycatch cap. Any overages of the salmon bycatch cap would be reported to NMFS Enforcement for possible enforcement action against the responsible entity.

### 1.2.3.2 Option 2: Rollover unused salmon bycatch to other sectors

**Option 2)** NMFS actively manages the salmon bycatch allocations to the non-CDQ sectors and would rollover unused salmon bycatch to other sectors still fishing based on the proportion of pollock remaining for harvest.

A "rollover" is a management action taken by NMFS to "reapportion" or move salmon bycatch from one sector to another through a notice in the Federal Register. Rollovers are an alternative to allowing one sector to voluntarily transfer salmon bycatch to another sector.

Under this option, if a non-CDQ AFA sector has completed harvest of its pollock allocation without using all of its salmon bycatch allocation, and sufficient salmon bycatch remains to be reapportioned, NMFS would reapportion the unused amount of salmon bycatch to other AFA sectors, including CDQ. Any reapportionment of salmon bycatch by NMFS would be based on the proportion each sector represented of the total amount of pollock remaining for harvest by all sectors through the end of the year. Successive reapportionment actions would occur as each non-CDQ sector completes harvest of its pollock allocation.

The CDQ groups could receive rollovers of salmon bycatch from other sectors. However, because the CDQ groups will each receive a specific, transferable allocation of salmon bycatch (as occurs under status quo), unused salmon bycatch would not be reapportioned from an individual CDQ group to other CDQ groups or other AFA sectors. CDQ groups with unused salmon bycatch could transfer it to another CDQ group, as is currently allowed in the CDQ Program

Options 1 and 2 are mutually exclusive.

#### **1.2.4 Component 4: Cooperative provisions**

Options under this component may be selected only if the Council recommends allocating salmon bycatch among the sectors under Component 2 and makes an allocation of salmon bycatch to the inshore sector. Component 4 would allow further allocation of transferable or non-transferable salmon bycatch allocations to the inshore cooperatives.

Each inshore cooperative and the inshore open access fishery (if the inshore open access fishery existed in a particular year) would receive a salmon allocation managed at the cooperative level. If the cooperative or open access fishery salmon cap is reached, the cooperative or open access fishery must stop fishing for pollock.

The initial allocation of salmon by cooperative within the shore-based CV fleet or to the open access fishery would be based upon the proportion of total sector pollock catch associated with the vessels in the cooperative or open access fishery. The annual pollock quota for this sector is divided up by applying a formula in the regulations which allocates catch to a cooperative or the open access fishery according to the specific sum of the catch history for the vessels in the cooperative or the open access fishery. Under 679.62(e)(1), the individual catch history of each vessel is equal to the sum of inshore pollock landings from the vessel's best 2 of the 3 years 1995 through 1997, and includes landings to catcher/processors for vessels that made landings of 500 mt or more to catcher/processors from 1995 through 1997. Each year, fishing permits are issued by cooperative, with the permit application listing the vessels added or subtracted. Fishing in the open access fishery is possible should a vessel leave their cooperative, and the shore-based CV quota allocation is partitioned to allow for an allocation to an open access fishery under these circumstances.

The range of cooperative level allocations are based upon the 2008 pollock quota allocations and the options for the range of sector splits for the inshore CV fleet based upon component 2, options 1 and 2 applied to component 1 options 1 and 2 (Table 17–Table 20). All inshore sector catcher vessels have been part of a cooperative since 2005. However, if this component is selected by the Council, regulations would accommodate allocations of an appropriate portion of the salmon bycatch cap to the open access fishery if, in the future, a vessel or vessels did not join a cooperative. For analytical purposes, the range of cooperative allocations would be analyzed using the ranges as indicated in Table 21 and Table 22.

Item C-4(a)

**Table 17 Inshore cooperative allocations resulting from application of component 2, option 1 allocation to the inshore CV fleet (50% of allocation after 10% to CDQ)**

Cap Suboption	Overall fishery cap level Non-Chinook	Resulting Inshore sector allocation	Inshore cooperative allocation:							
			31.145% Akutan CV Assoc	1.146% Arctic Enterprise Assoc	9.481% Northern Victor Fleet coop	2.876% Peter Pan Fleet coop	12.191% Unalaska coop	24.256% Unisea Fleet coop	18.906% Westward Fleet coop	0.000% open access AFA vessels
i)	58,176	26,179	8,154	300	2,482	753	3,192	6,350	4,949	0
ii)	76,252	34,313	10,687	393	3,253	987	4,183	8,323	6,487	0
iii)	147,204	66,242	20,631	759	6,280	1,905	8,076	16,068	12,524	0
iv)	203,080	91,386	28,462	1,047	8,664	2,628	11,141	22,167	17,277	0
v)	220,614	99,276	30,920	1,138	9,412	2,855	12,103	24,080	18,769	0
vi)	347,984	156,593	48,771	1,795	14,847	4,504	19,090	37,983	29,605	0
vii)	488,045	219,620	68,401	2,517	20,822	6,316	26,774	53,271	41,521	0

**Table 18 Inshore cooperative allocation resulting from application of component 2, option 2a allocation to the inshore CV fleet (average historical bycatch from 2004-2006)**

Cap Suboption	Overall fishery cap level Non-Chinook	Resulting Inshore sector allocation	Inshore cooperative allocation:							
			31.145% Akutan CV Assoc	1.146% Arctic Enterprise Assoc	9.481% Northern Victor Fleet coop	2.876% Peter Pan Fleet coop	12.191% Unalaska coop	24.256% Unisea Fleet coop	18.906% Westward Fleet coop	0.000% open access AFA vessels
i)	58,176	50,031	15,582	573	4,743	1,439	6,099	12,136	9,459	0
ii)	76,252	65,577	20,424	752	6,217	1,886	7,994	15,906	12,398	0
iii)	147,204	126,595	39,428	1,451	12,003	3,641	15,433	30,707	23,934	0
iv)	203,080	174,649	54,394	2,001	16,558	5,023	21,291	42,363	33,019	0
v)	220,614	189,728	59,091	2,174	17,988	5,457	23,130	46,020	35,870	0
vi)	347,984	299,266	93,206	3,430	28,373	8,607	36,484	72,590	56,579	0
vii)	488,045	419,719	130,721	4,810	39,794	12,071	51,168	101,807	79,352	0

Item C-4(a)

**Table 19 Inshore cooperative allocation resulting from application of component 2, option 2b allocation to the inshore CV fleet (average historical bycatch from 2002-2006)**

Cap Suboption	Overall fishery cap level Non-Chinook	Resulting Inshore sector allocation	Inshore cooperative allocation:							
			31.145% Akutan CV Assoc	1.146% Arctic Enterprise Assoc	9.481% Northern Victor Fleet coop	2.876% Peter Pan Fleet coop	12.191% Unalaska coop	24.256% Unisea Fleet coop	18.906% Westward Fleet coop	0.000% open access AFA vessels
i)	58,176	48,868	15,220	560	4,633	1,405	5,957	11,853	9,239	0
ii)	76,252	64,052	19,949	734	6,073	1,842	7,809	15,536	12,110	0
iii)	147,204	123,651	38,511	1,417	11,723	3,556	15,074	29,993	23,378	0
iv)	203,080	170,587	53,129	1,955	16,173	4,906	20,796	41,378	32,251	0
v)	220,614	185,316	57,717	2,124	17,570	5,330	22,592	44,950	35,036	0
vi)	347,984	292,307	91,039	3,350	27,714	8,407	35,635	70,902	55,263	0
vii)	488,045	409,958	127,681	4,698	38,868	11,790	49,978	99,439	77,507	0

**Table 20 Inshore cooperative allocation resulting from application of component 2, option 2c allocation to the inshore CV fleet (average historical bycatch from 1997-2006)**

Cap Suboption	Overall fishery cap level Non-Chinook	Resulting Inshore sector allocation	Inshore cooperative allocation:							
			31.145% Akutan CV Assoc	1.146% Arctic Enterprise Assoc	9.481% Northern Victor Fleet coop	2.876% Peter Pan Fleet coop	12.191% Unalaska coop	24.256% Unisea Fleet coop	18.906% Westward Fleet coop	0.000% open access AFA vessels
i)	58,176	47,704	14,858	547	4,523	1,372	5,816	11,571	9,019	0
ii)	76,252	62,527	19,474	717	5,928	1,798	7,623	15,166	11,821	0
iii)	147,204	120,707	37,594	1,383	11,444	3,472	14,715	29,279	22,821	0
iv)	203,080	166,526	51,864	1,908	15,788	4,789	20,301	40,392	31,483	0
v)	220,614	180,903	56,342	2,073	17,151	5,203	22,054	43,880	34,202	0
vi)	347,984	285,347	88,871	3,270	27,054	8,207	34,787	69,214	53,948	0
vii)	488,045	400,197	124,641	4,586	37,943	11,510	48,788	97,072	75,661	0

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**Table 21 Range of cooperative level caps for use in analysis of impacts of component 4 as applied to component 2, option 1**

Cap Suboption	Overall fishery cap level Non-Chinook	Resulting Inshore sector allocation	Inshore cooperative allocation:							
			31.145% Akutan CV Assoc	1.146% Arctic Enterprise Assoc	9.481% Northern Victor Fleet coop	2.876% Peter Pan Fleet coop	12.191% Unalaska coop	24.256% Unisea Fleet coop	18.906% Westward Fleet coop	0.000% open access AFA vessels
i)	58,000	26,100	8,129	299	2,475	751	3,182	6,331	4,934	0
ii)	206,300	90,585	28,213	1,038	8,588	2,605	11,043	21,972	17,126	0
iii)	353,000	155,250	48,353	1,779	14,719	4,465	18,927	37,657	29,352	0
iv)	488,000	219,600	68,394	2,517	20,820	6,316	26,771	53,266	41,518	0

**Table 22 Cap ranges for analysis of hard cap component 2, option 2 (a-c) for component 4 cooperative provision**

Cap Suboption	Overall fishery cap level Non-Chinook	Resulting Inshore sector allocation	Inshore cooperative allocation:							
			31.145% Akutan CV Assoc	1.146% Arctic Enterprise Assoc	9.481% Northern Victor Fleet coop	2.876% Peter Pan Fleet coop	12.191% Unalaska coop	24.256% Unisea Fleet coop	18.906% Westward Fleet coop	0.000% open access AFA vessels
2a(i)	58,000	49,880	15,535	572	4,729	1,435	6,081	12,099	9,430	0
2a(ii)	206,300	173,118	53,918	1,984	16,413	4,979	21,105	41,992	32,730	0
2a(iii)	353,000	296,700	92,407	3,400	28,130	8,533	36,171	71,968	56,094	0
2a(iv)	488,000	419,680	130,709	4,810	39,790	12,070	51,163	101,798	79,345	0
2b(i)	58,000	48,720	15,174	558	4,619	1,401	5,939	11,818	9,211	0
2b(ii)	206,300	169,092	52,664	1,938	16,032	4,863	20,614	41,015	31,969	0
2b(iii)	353,000	289,800	90,258	3,321	27,476	8,335	35,330	70,294	54,790	0
2b(iv)	488,000	409,920	127,670	4,698	38,865	11,789	49,973	99,430	77,499	0
2c(i)	58,000	47,560	14,813	545	4,509	1,368	5,798	11,536	8,992	0
2c(ii)	206,300	165,066	51,410	1,892	15,650	4,747	20,123	40,038	31,207	0
2c(iii)	353,000	282,900	88,109	3,242	26,822	8,136	34,488	68,620	53,485	0
2c(iv)	488,000	400,160	124,630	4,586	37,939	11,509	48,784	97,063	75,654	0



#### 1.2.4.1 Cooperative transfer options

These options would only apply if the Council selected sector allocations under Component 2 and further allocated the inshore sector allocation among the cooperatives and the inshore open access fishery (if the inshore open access fishery existed in a particular year) under Component 4.

When a salmon cooperative cap is reached, the cooperative must stop fishing for pollock and may:

**Option 1)** Transfer (lease) its remaining pollock to another inshore cooperative for the remainder of the season or year. Allow inter-cooperative transfers of pollock to the degree currently authorized by the AFA.

**Option 2)** Transfer salmon bycatch from other inshore cooperatives (industry initiated)

**Suboption:** Limit transfers to the following percentage of salmon that is available to the transferring entity at the time of transfer:

- a) 50%
- b) 70%
- c) 90%

The Council could select Option 1 or Option 2 or both.

### 1.3 Alternative 3: Triggered closures (non-Chinook)

Triggered closures are regulatory time area closures that are invoked when cap levels are reached. Cap levels for triggered closures would be formulated in a way similar to those specified under alternative 2.

If the trigger cap is not further allocated among the non-CDQ sectors under Component 3, sector allocation, the CDQ Program would receive an allocation of 10.7 percent of the BS Chinook salmon trigger cap. This CDQ allocation would be further allocated among the six CDQ groups based on percentage allocations currently in effect. Each CDQ group would be prohibited from directed fishing for pollock inside the closure area(s) when that group's trigger cap is reached.

#### 1.3.1 Component 1: Trigger Cap Formulation

The trigger cap amount will be within the range of hard caps established under Alternative 2.

#### 1.3.2 Component 2: Sector Allocation

Sector allocations are equivalent to those under consideration for hard caps.

#### 1.3.3 Component 3: Sector Transfer

**Option 1)** Transfer salmon bycatch among sectors (industry initiated)

**Suboption:** Limit transfers to the following percentage of salmon that is available to the transferring entity at the time of transfer:

- a) 50%
- b) 70%
- c) 90%

**Option 2)** NMFS will rollover unused salmon bycatch to other sectors and other cooperatives still fishing based on the proportion of pollock remaining for harvest.  
The above options are mutually exclusive.

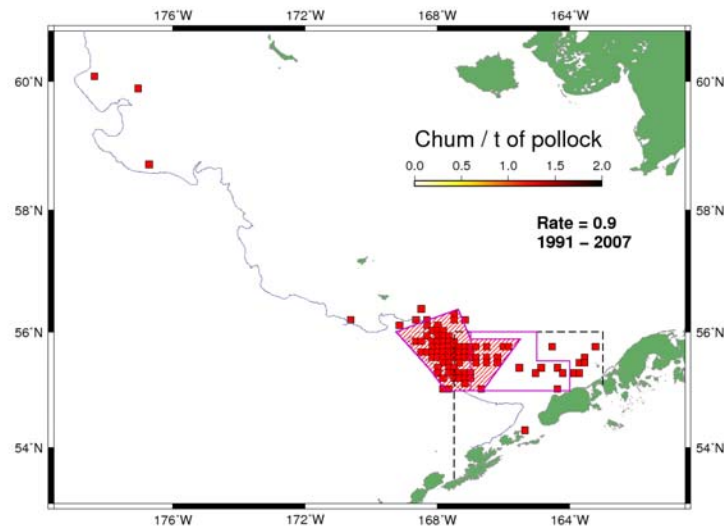
**1.3.4 Component 4: Area option**

This closure was identified by rate-based analysis delineating regions where average bycatch rate exceeded 0.9 chum salmon per ton of pollock (Figure 3). Over the entire B season, this area accounts for 49% of the chum salmon on average (1994-2007) and only 12% of the pollock catch (Figure 3)

**Table 23 Area closure coordinates**

55° 53'	165° 30'	56° 00'	169° 15'
55° 00'	166° 38'	56° 23'	167° 23'
55° 00'	167° 45'	55° 53'	167° 00'
55° 23'	168° 15'	55° 53'	165° 30'

Small area



**Figure 3 B-season chum salmon proposed closure over different rates based on 1991-2007 NMFS observer data. Filled in 10x10km cells represent locations where the average bycatch rate exceeded 0.9 chum salmon per t of pollock.**

**Table 24 Average seasonal proportions by periods for 1993-2007 based on NMFS observer data (effort is relative hours towed, salmon are relative numbers, and pollock are relative tons).**

<b>Periods</b>	<b>Seasonal pollock proportion</b>	<b>Seasonal "other" salmon proportion</b>	<b>Seasonal effort proportion</b>
Jun 1-7	0%	1%	1%
Jun 8-14	1%	1%	1%
Jun 15-21	2%	2%	2%
Jun 22-30	4%	3%	3%
Jul 1-7	4%	4%	3%
Jul 8-14	4%	2%	4%
Jul 15-21	4%	6%	3%
Jul 22-31	7%	6%	6%
Aug 1-7	5%	9%	5%
Aug 8-14	6%	5%	5%
Aug 15-21	7%	10%	7%
Aug 22-31	11%	7%	11%
Sep 1-7	9%	9%	9%
Sep 8-14	8%	9%	9%
Sep 15-21	8%	9%	9%
Sep 22-30	8%	5%	9%
Oct 1-7	5%	5%	6%
Oct 8-14	4%	4%	4%
Oct 15-21	2%	2%	3%
Oct 22-31	2%	1%	2%

**Table 25 Average 1993-2007 seasonal pattern of other salmon bycatch per t of pollock in and outside of candidate closure area by different periods.**

Area	Periods	Rate In	Rate Outside	Pollock inside	Chum Inside	Effort Inside
Small	All of B	1.216	0.144	5%	33%	5%
Small	Jun 1-7	-	0.338	0%	0%	0%
Small	Jun 8-14	0.221	0.186	0%	0%	0%
Small	Jun 15-21	0.034	0.283	3%	0%	3%
Small	Jun 22-30	0.372	0.161	3%	6%	3%
Small	Jul 1-7	0.040	0.255	5%	1%	4%
Small	Jul 8-14	0.289	0.104	12%	27%	11%
Small	Jul 15-21	2.473	0.118	8%	66%	8%
Small	Jul 22-31	0.965	0.131	5%	28%	5%
Small	Aug 1-7	3.137	0.138	8%	66%	7%
Small	Aug 8-14	0.607	0.166	6%	18%	6%
Small	Aug 15-21	1.363	0.200	6%	32%	7%
Small	Aug 22-31	0.833	0.109	3%	21%	4%
Small	Sep 1-7	0.970	0.148	6%	30%	7%
Small	Sep 8-14	2.199	0.137	3%	37%	4%
Small	Sep 15-21	1.519	0.128	6%	44%	6%
Small	Sep 22-30	0.963	0.108	4%	25%	4%
Small	Oct 1-7	0.940	0.128	6%	33%	6%
Small	Oct 8-14	1.538	0.153	3%	26%	3%
Small	Oct 15-21	0.817	0.152	7%	29%	7%
Small	Oct 22-31	0.383	0.111	14%	37%	12%

#### **1.3.4.1.1 Suboption: Periodic adjustments to areas based on updated bycatch information.**

Under this suboption, the Council will reassess updated salmon bycatch information after a certain number of years and determine if adjustments to any area options implemented under this action are needed. If the Council selects this option, it would specify when the reassessment of salmon bycatch information would occur. Any revisions to the salmon bycatch management measures would require additional analysis and rulemaking. The Council may reassess any management measure at any time and does not need to specify a particular time for reassessment of the salmon bycatch management measures.

### **CONSIDERATIONS FOR ANALYSIS**

Any measures under consideration for chum salmon bycatch management by the Council will be analyzed separately from actions currently under consideration for Chinook salmon bycatch. Chinook salmon bycatch measures are being analyzed in the Chinook Salmon Bycatch Management Measures EIS/RIR/IRFA scheduled for public release in early December for a public comment period. Final action by the Council on that analysis is scheduled for April 2009 after which regulations to promulgate changes to the current program will be drafted.

The specific NEPA analysis (EA or EIS) required for any chum management measures under consideration has not yet been determined. NMFS determined that an EIS was necessary at the time the Council still had Chinook salmon and non-Chinook (chum) salmon bycatch management measures together in the same analytical document. Reasons for this determination were identified by NMFS and discussed at the October 2007 Council meeting. These include the following:

- An EA must conclude that there are no significant impacts associated with the preferred alternative. Two sources of uncertainty have been identified during salmon bycatch workgroup meetings, and in the current discussion paper. These include:
  - The extent to which recent increases in salmon bycatch in the groundfish fisheries are associated with increases in salmon biomass in the BSAI is not known.
  - The effects of increased bycatch in the groundfish fisheries on western Alaska salmon stocks, and the effects of salmon bycatch in the groundfish fisheries to the human environment, including subsistence and commercial fisheries in western Alaska, are not known.
- NAO 216-6 lists several situations which need to be considered to determine if the action has significant effects. Paragraph 6.02a requires an EA to determine if “The proposed action may be reasonably expected to jeopardize the sustainability of any non-target species.” If the proposed action is expected to jeopardize non-target stocks, or if there is not enough information to determine if the action is expected to jeopardize non-target species, then the EA cannot come to FONSI. For the reasons described above, we are concerned about the Council’s ability to come to FONSI.
- In contrast, an EIS must disclose known relevant impacts, identify the most current information, and identify the unknowns and the relevance of those unknowns.
- NAO 216-6 4.01g, 5.03b.1, and 6.03d.1 state that an EA must contain sufficient evidence to determine the level of significance of the impacts.
- An EA would contain most of the content that would be required in an EIS.
- The Council may initiate either an EA or and EIS. However, an EIS would be required if the analysis can ultimately not conclude FONSI. All of the required processes, including scoping, would need to be completed. This would delay the action further.

Further as noted in the scoping notice for the Salmon Bycatch Reduction Measures EIS (which addressed both Chinook and non-Chinook salmon): “NMFS and the Council have determined the preparation of an Environmental Impact Statement (EIS) may be required for this action because some important aspects of the impacts of salmon bycatch in the BSAI on the salmon stocks of origin and users of these salmon are uncertain or unknown and may result in significant impacts on the human environment not previously analyzed.”

In addition to the mandatory NEPA timing and notification requirements involved in production of an EIS, the analysts themselves are currently fully tasked with production of the Chinook salmon analysis. It is assumed that many if not all of the current analysts on the Chinook salmon project would be tasked to work on any subsequent chum salmon analysis. As a result, the timeline for such an analysis must also consider the timeline for the Chinook analysis as described above.

**COUNCIL ACTION AT THIS MEETING**

The Council at this meeting may choose to do the following:

1. Review and revise as necessary the current suite of alternatives for chum salmon bycatch management measures for the EBS pollock fleet
2. Discuss NEPA analytical documentation requirements (EA vs. EIS), staff availability for analysis and timing of resulting Council action.

**ATTACHMENT 1 BSAI SALMON BYCATCH MOTION APRIL 2008**

[Non-Chinook portion of Council motion only]

Strike-out refers back to March 2008 staff discussion paper description of alternatives while underline represents additions.

**Alternatives and options**

This action shall be bifurcated such that the analysis outlined under Action 1 for Chinook comes back to the Council for Initial Review in June and Action 2 (non-Chinook) comes back in October.

**Option B (applies to Alternatives 3 and 4 only):**

Exempt those vessels participating in a VRHS system from area closures

**ACTION 2: NON-CHINOOK SALMON (CHUM)****Alternative 1: Status Quo (non-Chinook)****Alternative 2: Hard Cap (non-Chinook)****Component 1: Hard Cap Formulation****Option 1: Range of numbers for hard cap formulation**

**Range of suboptions for hard cap for non-Chinook with breakout for CDQ allocation (10.7%) and remainder for non-CDQ fleet**

Sub Option	Non-Chinook	CDQ	Non-CDQ
i)	58,176	6,225	51,951
ii)	76,252	8,159	68,093
iii)	147,204	15,751	131,453
iv)	203,080	21,730	181,350
v)	220,614	23,606	197,008
vi)	347,984	37,234	310,750
vii)	488,045	52,221	435,824

**Option 2: Framework Cap (cap set relative to salmon returns)****Component 2: Sector Allocation**

Divide the final cap by sectors based on:

**Option 1)** 10% of the cap to the CDQ sector, and the remaining allocated as follows:

50% inshore CV fleet; 10% for the mothership fleet; and 40% for the offshore CP fleet.

**Option 2)** Historical average of percent bycatch by sector based on:

a) 3 year (2004-2006) average CDQ 1%; inshore CV fleet 86%; mothership fleet 2%; offshore CP fleet 11%.

b) 5 year (2002-2006) average: CDQ 2%; inshore CV fleet 84%; mothership fleet 3%; offshore CP fleet 11%.

c) 10 year (1997-2006) average: CDQ 2%; inshore CV fleet 82%; mothership fleet 4%; offshore CP fleet 12%.

### Component 3: Sector Transfer

**Option 1)** Transfer salmon bycatch among sectors (industry initiated)

**Suboption:** Limit transfers to the following percentage of salmon that is available to the transferring entity at the time of transfer:

- d) 50%
- e) 70%
- f) 90%

**Option 2)** NMFS will rollover unused salmon bycatch to other sectors still fishing based on the proportion of pollock remaining for harvest.

The above options are mutually exclusive.

### Component 4: Cooperative provisions

#### Cooperative transfer options

When a salmon coop cap is reached, the coop must stop fishing for pollock and may:

**Option 1)** Lease their remaining pollock to another coop (inter-cooperative transfer) within their sector for that year (or similar method to allow pollock harvest with individual coop accountability).

**Option 2)** Transfer salmon bycatch from other inshore cooperatives.

**Suboption:** Limit transfers to the following percentage of salmon that is available to the transferring entity at the time of transfer:

- a) 50%
- b) 70%
- c) 90%

~~Rollover suboption: NMFS will rollover unused salmon bycatch to other sectors and inshore cooperatives still fishing.~~

#### ~~Alternative 3: Fixed closures (non-Chinook)~~

#### Alternative 3 -4: Triggered closures (non-Chinook)

#### Component 1: Trigger Cap Formulation

~~Cap formulation for trigger caps is equivalent to those under consideration for hard caps.~~

The trigger cap amount will be within the range of hard caps established under Alternative 2.

#### Component 2: Sector Allocation

Sector allocations are equivalent to those under consideration for hard caps.

#### Component 3: Sector Transfer

**Option 1)** Transfer salmon bycatch among sectors (industry initiated)

**Suboption:** Limit transfers to the following percentage of salmon that is available to the transferring entity at the time of transfer:

- d) 50%
- e) 70%
- f) 90%

**Option 2)** NMFS will rollover unused salmon bycatch to other sectors and other cooperatives still fishing based on the proportion of pollock remaining for harvest.

The above options are mutually exclusive.



#### Component 4: Area options

**Option 1:** Areas (note all B season closures for non-Chinook)

~~i. Adjust area according to the number of salmon caught~~

~~ii. Single area closure~~

~~iii. Multiple area closures~~

~~Candidate areas (need to fold into above)~~

~~i. August B season candidate closure~~

**Option 1a)** Small closure

**Option 1b)** Medium closure

**Option 1c)** Large closure

**Option 2)** Expanding area closure

**Suboption:** Periodic adjustments to areas based on updated bycatch information.

Comparison of NMFS survey estimates of pollock biomass in the CVOA with pollock catch within the same region (1998-2007) suggests that expected CPUE in this region may be lower. This should be explicitly considered for the potential effect on salmon bycatch patterns in the EIS.