

Subdividing TACs in the Future

Any management system developed under Amendment 80a must be adaptable to future changes in TAC groupings/area allocations that may occur. Without devising a plan to allocate the sector allotments, if new TAC groupings/area allocations are implemented, NMFS' ability to issue future sector allocations in a timely fashion may be at risk. A management structure that provides NMFS direction on how to treat TAC changes would allow them to implement changes without going through a process that requires Council action and public comment. If those procedural steps must be taken to accommodate TAC changes before allocations can be issued, it is unlikely that the sector allocations would be made in time to start fisheries either on January 1st for hook-and-line and pot gear vessels or January 20th for trawl gear vessels.

Proper oversight of the Bering Sea and Aleutian Islands (BSAI) groundfish fisheries could require revising TAC groupings/area allocations in the future to meet biological or management objectives. Changes to TAC groupings/area allocations can be made either by altering the list of species assigned a TAC or by altering the geographic regions the TAC for a species represents.

This issue is complicated by the fact that as better genetic information becomes available, for species like rockfish, there are new species being identified and sub-populations may be identified that need to be protected. Pacific ocean perch are showing genetic structure within the ABCs defined in the GOA and roughey rockfish appear as though they may be composed of two sub-species. Given the increased biological information that is becoming available, new management systems that allocate TAC among sectors must acknowledge and make provisions for additional species that may require explicit management. Policy makers must not only consider future management needs from the stand point of breaking up species complexes like 'other species', other rockfish, and other flatfish, but also subdividing current single species ABCs.

Future TAC changes may be foreseeable, or they may not have been considered yet. The Council has been considering breaking the Pacific cod assessment into two ABC recommendations - one for the Bering Sea subarea and one for the Aleutian Islands subarea. In addition, the AFSC plans to develop a stock assessment for Pacific cod in the BS and AI subareas in the near future. Because the TAC is currently set for the entire BSAI management area, both the current allocations under BSAI Amendment 77 and the allocation formula being developed under Amendment 80a issues sector allotments based on the member's catches in the combined areas. If the TAC definitions are changed in the future, the formula for allocating the new TACs must account for those changes.

Also complicating this issue is whether PSC species will also need to be adjusted if TAC definitions are changed. This issue will only be discussed briefly in this paper, but it may be critical if a goal is rationalizing the BSAI Pacific cod fisheries.

The issue of altering TAC categories has been primarily discussed in terms of the Pacific cod fisheries at the IR/IU Technical Committee and in other forums. Pacific cod has been highlighted because the Council is currently discussing changing the Pacific cod TAC area designations. Discussing this issue using Pacific cod as the primary example seems reasonable since many of the management issues and problems associated with splitting the Pacific cod TAC into finer areas could also potentially apply to altering other species TACs. This paper explores how TAC changes could be implemented, in terms of

inseason management, with particular emphasis placed on the impacts sectors could realize under Amendment 80a.

Relevant Background Information on the Pacific Cod Fishery

Consider an example that could have resulted if separate BSAI Pacific cod TACs were set in 2004. The Pacific cod TAC was set at 215,500 mt in 2004 for the BSAI management area. After a 7.5% deduction was taken for the CDQ program, the remaining 199,338 mt were divided among the sectors. The SSC noted, at their December 2003 meeting, that if the 2004 Pacific cod ABC was apportioned to the Aleutian Islands and Bering Sea using the “same multiplier” used for the combined areas, the Aleutian Islands subarea and Bering Sea subarea would have had ABCs of 32,000 mt and 191,000 mt, respectively. Combined, the total ABC for the two areas was 223,000 mt. Differences between the estimated ABCs in the two areas and the TACs that would have been set cannot be determined with certainty. However, if the difference between the TAC and ABC for the entire BSAI were applied to the two areas, TACs of 30,924 mt and 184,576 mt would have been set for the Aleutian Islands subarea and Bering Sea subarea, respectively. After CDQ deductions the Aleutian Islands subarea and Bering Sea subarea would have been allocated 28,605 mt and 170,733 mt, respectively.

Groundfish licenses are currently required to participate in the BSAI groundfish fisheries in Federal waters. Groundfish licenses contain endorsements that define what the vessel using the license can do. Area endorsements define the geographic locations the licenses allow a vessel to fish. Under the Groundfish License Limitation Program, separate endorsements were issued for the Bering Sea subarea and Aleutian Islands subarea. Subarea endorsements were earned based on historic fishing patterns. Licenses may contain endorsements for both subareas, one of the two subareas, or neither of the subareas. Gear endorsements define what type of gear may be used: non-trawl, trawl, or both. Further, gear endorsements are required for vessels >60’ to participate in the BSAI fixed gear Pacific cod fishery: hook-and-line catcher processors, pot catcher processors, hook-and-line catcher vessel, and pot catcher vessel.

Table 1 shows the endorsements that have been issued on groundfish licenses with a Bering Sea and/or Aleutian Islands endorsement. The far right column is the number of licenses that have been issued to fish in the BSAI. The other columns provide information on how the vessels using those licenses may operate. The first two columns on the left side of the table identify the gear endorsements on the licenses. “No” in the column indicates that they are not endorsed to use that gear type; “Yes” in the column means they may legally use that gear type. Using the “Grand Total” column and the “Gear Endorsements” columns we know that 343 of the 563 licenses may be used by vessels deploying only non-trawl gear. The remaining 220 licenses may be used on trawl vessels, with 85 of the 220 also endorsed for non-trawl gear. In the “Fixed Gear Cod Endorsement” columns, licenses are grouped by fixed gear Pacific cod endorsements. The BSAI endorsement section of the table shows whether the license includes an endorsement for the Bering Sea, Aleutian Islands, or both.

Table 1: Groundfish licenses that are endorsed for the Bering Sea/Aleutian Islands.

Gear Endorsements		Fixed Gear Cod Endorsements				BSAI endorsements			Total Licenses		
TRAWL	NON TRAWL	CP HAL	CP POT	CV POT	CV HAL	Both AI & BS	AI Only	BS Only			
No	Yes	No	No	No	No	80	10	135	225		
					Yes	5		5			
				Yes	No	9		55	64		
					Yes			2	2		
				Yes	No	No	2		3	5	
					Yes	Yes	1			1	
		Yes	No	No	No	No	32		2	34	
					Yes	1		1			
					Yes	No	1		1		
				Yes	No	No	3		3		
					Yes	1		1			
					Yes	No	1		1		
		Total for Licenses with No Trawl Gear Endorsement						136	10	197	343
		Yes	No	No	No	No	No	76		59	135
Yes	No							No	No	No	23
	Yes				1		1				
	Yes		No	1		3	4				
Yes	No		No	No	5		5				
Total for Licenses with Trawl Gear Endorsement						105	3	112	220		
Grand Total of All Bering Sea/Aleutian Islands Licenses						241	13	309	563		

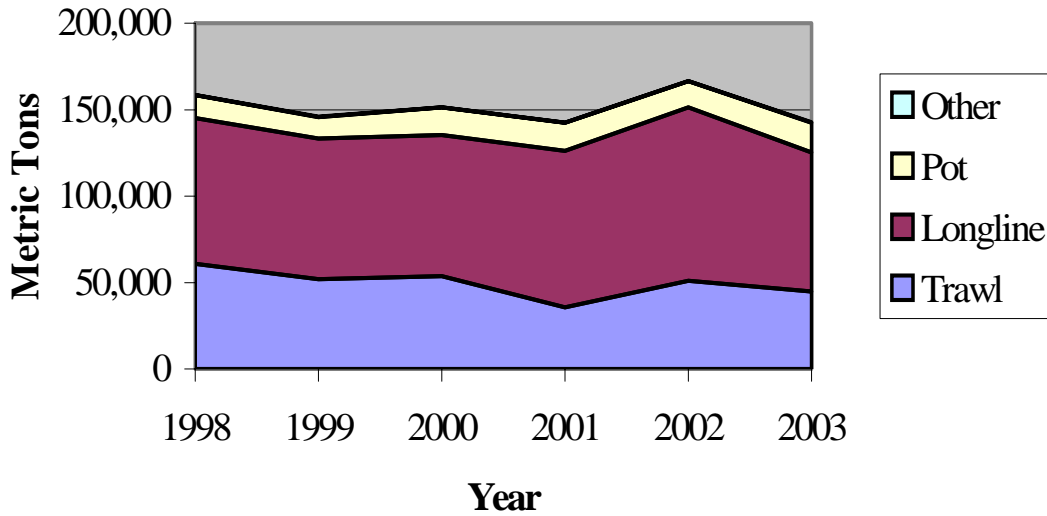
Source: NMFS Groundfish LLP database.

Information contained in Table 1 shows that 13 licenses are endorsed for the Aleutian Islands subarea only. All of those licenses may be used on non-trawl gear vessels, but only one is endorsed to participate in the directed fixed gear Pacific cod fishery (as a hook-and-line catcher vessel). Three of the 13 licenses are also endorsed for use on trawl vessels. They may participate in the directed Pacific cod fishery, but only with trawl gear.

About 40% of the non-trawl gear licenses are endorsed to fish both subareas, and about 50% of the licenses endorsed for trawl gear are endorsed to fish both subareas. The majority of licenses are endorsed for the Bering Sea subarea only.

Fishing patterns of vessels using the BSAI groundfish licenses will play an important role in determining the economic impacts of the splitting the Pacific cod ABC into Bering Sea and Aleutian Islands subareas. The two figures below are based on 2004 SAFE data and show the Aleutian Islands subarea and Bering Sea subarea Pacific cod catches by gear type from 1998-2003. The information in those figures indicates that trawl vessels have harvested almost all of the Aleutian Islands Pacific cod in recent years. Trawl vessels tended to harvest the majority of the Aleutian Islands Pacific cod in the earlier years, but the differences were not as pronounced. Harvest patterns in the Bering Sea appear to be more stable.

Bering Sea Pacific cod catch by gear type, 1998-2003



Aleutian Islands Pacific cod catch by gear type, 1998-2003

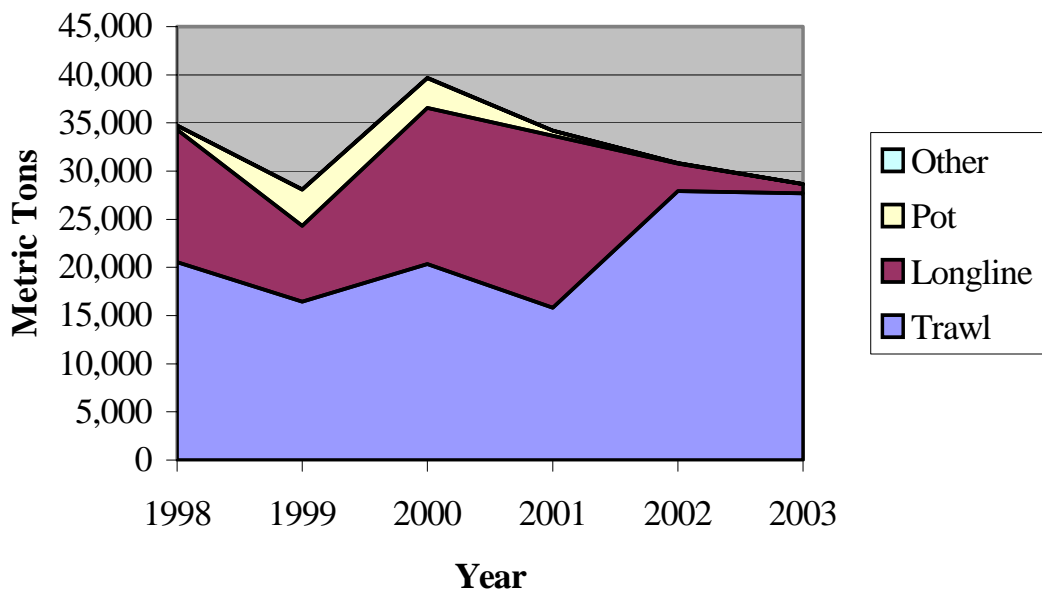


Table 2 shows the historic Pacific cod harvests in the Bering Sea subarea and Aleutian Islands subarea over the years 1995-2002 by fishing sector. Data in Table 2 is not broken out by all the sectors defined in Amendment 80a. The data to provide those breakouts has not yet been compiled by staff. While these categories are, in some cases, broader than those used in Amendment 80a, they do provide insights into where sectors have harvested Pacific cod in the Aleutian Islands subarea and Bering Sea subarea over the 1995-2002 time period.

Pacific cod harvests with trawl gear accounted for 67% of the harvest in the Aleutian Islands from 1995 - 2003 (Table 2). In 2002 and 2003, vessels using trawl gear harvested 91% and 97%, respectively (Blend Data). That information indicates that trawl vessels have traditionally harvested the majority of the Pacific cod catch in the Aleutian Islands, and over the past two full fishing years that percentage has dramatically increased. Vessels using hook-and-line gear harvested the remainder of the Aleutian Islands Pacific cod in 2002 and 2003. Based on these observations, the years used to allocate Aleutian Islands and Bering Sea TACs among sectors would greatly impact the distribution. Also recall that if the TAC were divided according to the current gear splits for the combined BSAI, trawl vessels would only be assigned 47% of the Aleutian Islands TAC.

Table 2: Historic fishing patterns of vessels in the Bering Sea and Aleutian Islands Pacific cod fishery by sector, 1995-2003.

Year	BS Harvest (mt)	AI Harvest (mt)	Total Harvest (mt)	Percent of Total BS Cod Catch	Percent of Total AI Cod Catch
AFA Trawl Catcher Processor					
1995	11,293	3,621	14,913	4.9%	21.9%
1996	8,170	4,122	12,292	3.9%	13.0%
1997	5,780	4,333	10,113	2.5%	17.3%
1998	5,033	3,973	9,006	3.1%	11.4%
1999	2,836	3,957	6,793	1.9%	14.1%
2000	1,959	1,838	3,797	1.3%	4.6%
2001	2,161	2,192	4,353	1.5%	6.4%
2002	2,633	1,388	4,021	1.6%	4.5%
2003	2,583	4,726	7,309	1.5%	14.6%
Avg. 95-03	4,716	3,350	8,066	2.5%	12.0%
Non-AFA Trawl Catcher Processor					
1995	30,770	4,189	34,959	13.5%	25.3%
1996	19,537	9,446	28,983	9.3%	29.9%
1997	28,026	1,820	29,846	12.1%	7.3%
1998	20,281	5,699	25,980	12.6%	16.3%
1999	20,199	5,167	25,366	13.9%	18.4%
2000	21,488	7,302	28,790	14.2%	18.4%
2001	18,831	6,854	25,685	13.2%	20.0%
2002	22,066	11,141	33,207	13.3%	36.2%
2003	17,578	12,481	30,058	9.9%	38.5%
Avg. 95-03	22,086	7,122	29,208	12.4%	23.4%

Pot Catcher Processors					
1995	3,608	1,021	4,629	1.6%	6.2%
1996	4,104	3,463	7,567	2.0%	11.0%
1997	4,037	406	4,443	1.7%	1.6%
1998	2,970	348	3,318	1.8%	1.0%
1999	2,256	917	3,174	1.5%	3.3%
2000	1,605	1,041	2,645	1.1%	2.6%
2001	2,649	492	3,141	1.9%	1.4%
2002	2,842	6	2,849	1.7%	0.0%
2003	5,181	0	5,181	2.9%	0.0%
Avg. 95-03	3,250	855	4,105	1.8%	3.0%
Hook-and-Line Catcher Processors					
1995	96,126	4,014	100,140	42.1%	24.3%
1996	89,903	5,788	95,692	43.0%	18.3%
1997	117,323	7,284	124,608	50.4%	29.0%
1998	86,260	13,757	100,016	53.7%	39.4%
1999	80,944	7,977	88,921	55.5%	28.4%
2000	81,185	15,508	96,693	53.6%	39.1%
2001	89,809	17,682	107,491	63.0%	51.7%
2002	99,141	2,759	101,900	59.8%	9.0%
2003	103,875	879	104,754	58.4%	2.7%
Avg. 95-03	93,841	8,405	102,246	53.3%	26.9%
Non-AFA Surimi and Fillet Catcher Processors (Trawl)					
1995	20,431	2,733	23,164	8.9%	16.5%
1996	9,033	5,422	14,455	4.3%	17.2%
1997	4,423	8,590	13,014	1.9%	34.3%
1998	2,144	9,871	12,016	1.3%	28.3%
Avg. 95-03	9,008	6,654	15,662	4.1%	24.0%
Hook-and-Line Catcher Vessels					
1995	1,104	920	2,024	0.5%	5.6%
1996	179	31	210	0.1%	0.1%
1997	129	33	163	0.1%	0.1%
1998	45	40	85	0.0%	0.1%
1999	169	142	311	0.1%	0.5%
2000	353	675	1,028	0.2%	1.7%
2001	551	135	686	0.4%	0.4%
2002	311	106	417	0.2%	0.3%
2003	496	96	592	0.3%	0.3%
Avg. 95-03	371	242	613	0.2%	1.0%

Pot Catcher Vessels					
1995	15,666	3	15,669	6.9%	0.0%
1996	23,001	1,148	24,149	11.0%	3.6%
1997	17,028	3	17,031	7.3%	0.0%
1998	10,016	37	10,053	6.2%	0.1%
1999	10,426	2,588	13,013	7.2%	9.2%
2000	14,278	2,066	16,344	9.4%	5.2%
2001	13,823	86	13,908	9.7%	0.3%
2002	12,812	0	12,812	7.7%	0.0%
2003	20,410	2	20,412	11.5%	0.0%
Avg. 95-03	15,273	659	15,932	8.5%	2.0%
Trawl Catcher Vessels					
1995	48,899	31	48,930	21.4%	0.2%
1996	54,870	2,189	57,060	26.2%	6.9%
1997	55,647	2,606	58,253	23.9%	10.4%
1998	33,684	1,214	34,898	21.0%	3.5%
1999	28,869	7,313	36,182	19.8%	26.0%
2000	30,431	11,221	41,652	20.1%	28.3%
2001	14,664	6,746	21,410	10.3%	19.7%
2002	25,927	15,393	41,320	15.6%	50.0%
2003	27,476	14,272	41,749	15.5%	44.0%
Avg. 95-03	35,608	6,776	42,384	19.3%	21.0%
Jig Catcher Vessels					
1995	599	0	599	0.3%	0.0%
1996	267	0	267	0.1%	0.0%
1997	173	0	173	0.1%	0.0%
1998	192	0	192	0.1%	0.0%
1999	100	69	169	0.1%	0.2%
2000	38	33	71	0.0%	0.1%
2001	52	19	71	0.0%	0.1%
2002	164	0	164	0.1%	0.0%
2003	155	0	156	0.1%	0.0%
Avg. 95-03	193	13	207	0.1%	0.0%

Source: NMFS Blend Data 1995-2002; NMFS Catch Accounting System 2003.

Options for Managing TAC Modifications

The next sections discuss how sector allocations that result from changes in TAC groupings/area allocations could be implemented in a timely fashion. A discussion of the impacts that the various allocation alternatives would have on the participants will also be presented.

Three different options will be presented for allocating Bering Sea subarea and Aleutian Islands subarea Pacific cod TACs to the Amendment 80a sectors. The options presented are the author's attempt to provide alternative approaches to dealing with this problem. Other reasonable options could be developed to resolve this problem that have not been considered in this paper. Each option assumes that the current gear allocations remain in place. The Council could select an option that supercedes those splits at the time of final action. However, this assumption was made to simplify this discussion. In other words, the three options are assumed to be subject to the hook-and-line and pot gear (51%), trawl gear (47%), and jig gear (2%) allocations. TAC subdivisions within the hook-and-line and pot gear sectors (Amendment 77 allocations) are also assumed to be included under these options.

The first option would calculate the percentage of each TAC based on the sector's historic harvest in each area during the qualification period. This approach would likely result in sectors being allocated different percentages of the Aleutian Islands and Bering Sea TACs. The second option would calculate the percentage of the combined Bering Sea/Aleutian Islands TAC they would be allocated and allow sectors to harvest that percentage from each area. This option would result in a sector being allocated the same percentage of TAC in the Bering Sea and Aleutian Islands areas, without regard to historic harvest patterns. The final option would use the second option to determine the sector allocations, but would not assign a specific amount of catch to the Bering Sea or Aleutian Islands. Instead, sectors would be allowed to harvest their allotment from either area. NMFS would close a subarea to directed fishing when the TAC for that sector is reached. That sector would then be required to move its entire directed Pacific cod fishing activity to the subarea that remains open.

Option 1: Allocations Based on Historic Harvest in Area

Option 1 would define the sector allocations for each area based on the relative percentages of Pacific cod that were harvested by the sectors during the qualifying period. This allocation split would be implemented in conjunction with the gear splits that are currently in place (this assumption was made by the author). The gear splits would be determined at the combined BSAI level and the sector allocations would be calculated at the individual subarea level. This would ensure that current gear allocations for the combined BSAI TAC remain in place, but sectors would be allocated different percentages of each area based on their historic harvest patterns. Because the formula for calculating the sector allocations is predetermined by Amendment 80a, it would be possible for inseason management staff to calculate the sector allocation formulas in a timely manner.

The steps for calculating the Pacific cod allocation under Option 1 are:

1. Multiply the gear allocation percentages, defined prior to Amendment 80a¹, by the combined BSAI region's TACs to determine the overall number of metric tons a gear group will be allowed to harvest.

This example assumes that the combined BSAI Pacific cod TAC is set at 199,338 mt after deductions are made for CDQ (7.5 percent of the TAC). In addition, approximately 0.5% of the hook-and-line and pot gear allocation was set aside as an ICA to meet Pacific cod bycatch needs in other non-Pacific cod directed fisheries by hook-and-line and pot gear vessels. The Aleutian Islands TAC is 28,533 mt and the Bering Sea TAC is 170,305 mt, combined they equal 198,838 mt. Given the current allocations by gear type the table below shows the total amount of Pacific cod each group would be allowed to harvest in the two areas combined.

¹ The 51% percent of the BSAI Pacific cod TAC that is allocated to the hook-and-line and pot gear sector was further subdivided under BSAI Amendment 77. Amendment 77 allocated 80% of the hook-and-line and pot gear allocation to hook-and-line catcher/processors, 15% to pot catcher vessels, 3.3% to pot catcher/processors, 0.3% to hook-and-line catcher vessels, and 1.4% to <60' pot/hook-and-line catcher vessels.

Table 3: Allocations by gear and type of operation that are currently in regulation

	<i>Gear Allocations Metric Tons</i>	
Trawl CV	23.500%	46,844
Trawl CP	23.500%	46,844
Trawl Total	47.000%	93,688
Jig	2.000%	3,987
H&L CP	40.800%	80,930
Pot CV	7.650%	15,174
Pot CP	1.683%	3,338
H&L CV	0.153%	303
<60' H&L - Pot	0.714%	1,416
H&L and Pot Total	51.000%	101,162

Note: The shaded trawl, jig, and H&L and pot totals reflect the gear allocations made under Amendment 67.

2. Assign each sector their historic percentage of the Aleutian Islands TAC (this percentage would need to be defined and it could be linked to the sector allocation years). The combinations of years identified by the Council as options to calculate sector allocations were used in Table 4. It should also be noted that information was not available for the <60' H&L – Pot CV sector when this section of the analysis was completed. Therefore, all of their allocation was taken from the BS in all but one alternative. During the 1995-97 time-period some of their allocation was assigned to the Aleutian Islands, because the Hook-and-Line CV sector would have been assigned more than their total allowable allocation in the Aleutian Islands. Therefore, 80mt of their allocation was assigned to the BS and the <60' H&L – Pot was assigned 80mt in the Aleutian Islands. This adjustment was not necessary during any other time period.

Table 4: Percentage of Pacific cod harvests in the Aleutian Islands caught by each sector

Sector	<i>AI Historic %</i>						
	1995-97	1995-02	1995-03	1998-02	1998-03	2000-03	2002-03
AFA CP (Trawl)	16.492%	10.550%	11.026%	7.957%	9.028%	7.397%	9.666%
Non-AFA Trawl CP	21.108%	21.421%	23.443%	21.557%	24.296%	27.547%	37.347%
Pot CP	6.678%	3.193%	2.814%	1.672%	1.401%	1.122%	0.010%
H&L CP	23.338%	31.029%	27.667%	34.385%	29.250%	26.854%	5.751%
Non-AFA S/F Trawl CP*	22.871%	11.046%	9.735%	5.884%	4.930%	0.000%	0.000%
H&L CV	1.345%	0.864%	0.797%	0.655%	0.597%	0.738%	0.319%
Pot CV	1.576%	2.461%	2.170%	2.848%	2.387%	1.571%	0.004%
Trawl CV	6.591%	19.385%	22.304%	24.969%	28.051%	34.733%	46.902%
Jig	0.000%	0.050%	0.044%	0.072%	0.060%	0.038%	0.000%
<60' H&L - Pot	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
Total	100.000%	100.000%	100.000%	100.000%	100.000%	100.000%	100.000%

* These were CPs that harvested pollock and other groundfish species, but left the fishery before 1999 and are not AFA qualified and are not eligible to reenter U.S. fisheries.

Table 5: Aleutian Islands allocations of Pacific cod that would result if the percentages from Table 4 were applied to the assumed Aleutian Islands TAC.

Sector	<i>AI Allocation (mt)</i>						
	1995-97	1995-02	1995-03	1998-02	1998-03	2000-03	2002-03
AFA CP (Trawl)	4,706	3,010	3,146	2,270	2,576	2,111	2,758
Non-AFA Trawl CP	6,023	6,112	6,689	6,151	6,932	7,860	10,656
Pot CP	1,906	911	803	477	400	320	3
H&L CP	6,659	8,853	7,894	9,811	8,346	7,662	1,641
Non-AFA S/F Trawl CP*	6,526	3,152	2,778	1,679	1,407	-	-
H&L CV	303	247	227	187	170	211	91
Pot CV	450	702	619	813	681	448	1
Trawl CV	1,881	5,531	6,364	7,125	8,004	9,910	13,383
Jig	-	14	13	21	17	11	0
<60' H&L - Pot	80	-	-	-	-	-	-
Total	28,533	28,533	28,533	28,533	28,533	28,533	28,533

* These were CPs that harvested pollock and other groundfish species, but left the fishery before 1999 and are not AFA qualified and are not eligible to reenter U.S. fisheries.

The Aleutian Islands allocations under the various time periods reflects the fact that sectors tend to fish more in the Aleutian Islands some years. Allocations to the Pot sectors indicate that pot vessels harvested relatively more of the Pacific cod taken from the Aleutian Islands during the years 1995-97 than they did during the 2002-2003 time period. Because of this variation in Aleutian Islands catches between sectors, the time period selected for the allocations largely determines whether pot vessels will be participants in the Aleutian Islands Pacific cod fishery in the future. Other sectors will also be impacted by the years selected as the historic base period, but in most cases would be less likely to be excluded from the Aleutian Islands fishery.

3. Adjust each sector's percentage of the Bering Sea TAC to ensure that they are allocated their assigned percentage of the combined Bering Sea and Aleutian Islands Pacific cod TACs. This adjustment is needed to ensure that each sector is given their entire allocation of the combined BSAI quota. Consider two sectors as examples. The H&L CP sector is assigned 40.8% of the Pacific cod. That percentage equates to 80,930mt of Pacific cod in the BSAI, in this example. Using historic catch rates from the years 1995-2002, that translates to 8,853mt in the Aleutian Islands. Because they were assigned 8,853mt in the Aleutian Islands, they are assigned a percentage of the BS TAC (see Table 6) that allows them to harvest the remainder of their 80,930² mt (72,076 mt) in the Bering Sea (see Table 7). For the next example consider a case where multiple sectors receive their Pacific cod allocation from the same gear allotment. In this case, an additional adjustment must be made to account for the relative catches of each sector. In the trawl catcher/processor sector, the AFA and Non-AFA trawl CP sectors share a Pacific cod allocation and would need to divide 23.5% of the TAC (half of the 47% of the Pacific cod TAC allocated to trawl gear vessels). To make that computation, the amount of Pacific cod the sectors were allocated in the Aleutian Islands (in step 2) would be subtracted from the total amount that is available to the two sectors. The remainder of the trawl CP allocation would be allocated from the Bering Sea based on each of the sector's relative historic Bering Sea harvest amounts. For example, during the 1995-02 time-period the AFA Trawl CPs harvested 18.1% of the trawl CP total in the BSAI, Non-AFA Trawl CPs harvested 64.5%, and the Non-AFA Surimi & Fillet CPs (recall that a decision needs to be made on how to treat this

² Rounding errors account for the fact that the BSAI total does not exactly equal the sum of the amounts reported for the Aleutian Islands and Bering Sea.

sector's catch) harvested 17.4% (based on catches reported in Table 2). Each sector's allocation from the BS and AI combined is equal to those percentages multiplied by the 46,844 mt available them in this example. That number is reported in Table 8. Their BS allocation is equal to the amount of Pacific cod available to them minus their allocation in the AI. That calculation is reflected in Tables 6 and 7.

Table 6: Percentage of Pacific cod harvests that may be taken from Bering Sea by each sector

Sector	<i>BS Historic %</i>						
	1995-97	1995-02	1995-03	1998-02	1998-03	2000-03	2002-03
AFA CP (Trawl)	2.885%	3.210%	3.168%	2.965%	2.972%	2.666%	2.558%
Non-AFA Trawl CP	10.658%	14.163%	14.234%	17.750%	17.423%	18.986%	17.071%
Pot CP	0.841%	1.425%	1.489%	1.680%	1.725%	1.772%	1.959%
H&L CP	43.610%	42.322%	42.885%	41.759%	42.620%	43.021%	46.557%
Non-AFA S/F Trawl CP*	3.831%	2.926%	2.697%	0.860%	0.701%	0.000%	0.000%
H&L CV	0.000%	0.033%	0.045%	0.068%	0.078%	0.055%	0.125%
Pot CV	8.646%	8.498%	8.547%	8.433%	8.510%	8.647%	8.909%
Trawl CV	26.402%	24.258%	23.769%	23.323%	22.807%	21.687%	19.648%
Jig	2.341%	2.333%	2.334%	2.329%	2.331%	2.335%	2.341%
<60' H&L - Pot	0.785%	0.832%	0.832%	0.832%	0.832%	0.832%	0.832%
Total	100.000%	100.000%	100.000%	100.000%	100.000%	100.000%	100.000%

* These were CPs that harvested pollock and other groundfish species, but left the fishery before 1999 and are not AFA qualified and are not eligible to reenter U.S. fisheries.

Table 7: Bering Sea allocations of Pacific cod that would result if the percentages from Table 6 were applied to the assumed Bering Sea TAC.

Sector	<i>BS Allocation (mt)</i>						
	1995-97	1995-02	1995-03	1998-02	1998-03	2000-03	2002-03
AFA CP (Trawl)	4,913	5,468	5,396	5,049	5,062	4,540	4,357
Non-AFA Trawl CP	18,152	24,120	24,242	30,230	29,673	32,334	29,073
Pot CP	1,433	2,427	2,535	2,861	2,939	3,018	3,335
H&L CP	74,271	72,076	73,035	71,118	72,584	73,267	79,289
Non-AFA S/F Trawl CP*	6,525	4,983	4,594	1,465	1,194	-	-
H&L CV	-	57	76	117	133	93	212
Pot CV	14,725	14,472	14,555	14,362	14,493	14,726	15,173
Trawl CV	44,964	41,313	40,480	39,720	38,841	36,934	33,462
Jig	3,987	3,972	3,974	3,966	3,970	3,976	3,987
<60' H&L - Pot	1,336	1,416	1,416	1,416	1,416	1,416	1,416
Total	170,305	170,305	170,305	170,305	170,305	170,305	170,305

* These were CPs that harvested pollock and other groundfish species, but left the fishery before 1999 and are not AFA qualified and are not eligible to reenter U.S. fisheries.

Table 8: Total BSAI Pacific cod allocation assigned to each sector under the proposed alternatives.

Sector	<i>Total BSAI Allocation (mt)</i>						
	1995-97	1995-02	1995-03	1998-02	1998-03	2000-03	2002-03
AFA CP (Trawl)	9,619	8,478	8,542	7,319	7,638	6,650	7,115
Non-AFA Trawl CP	24,174	30,232	30,931	36,381	36,606	40,194	39,729
Pot CP	3,338	3,338	3,338	3,338	3,338	3,338	3,338
H&L CP	80,930	80,930	80,930	80,930	80,930	80,930	80,930
Non-AFA S/F Trawl CP*	13,051	8,135	7,371	3,144	2,601	-	-
H&L CV	303	303	303	303	303	303	303
Pot CV	15,174	15,174	15,174	15,174	15,174	15,174	15,174
Trawl CV	46,844	46,844	46,844	46,844	46,844	46,844	46,844
Jig	3,987	3,987	3,987	3,987	3,987	3,987	3,987
<60' H&L - Pot	1,416	1,416	1,416	1,416	1,416	1,416	1,416
Total	198,838	198,838	198,838	198,838	198,838	198,838	198,838

* These were CPs that harvested pollock and other groundfish species, but left the fishery before 1999 and are not AFA qualified and are not eligible to reenter U.S. fisheries.

An advantage of selecting Option 1 is that it takes into account the percentages of Pacific cod that each sector historically harvested in the most restrictive subarea. Those percentages may not reflect the current fishing patterns, but they could more closely reflect historic reliance on a subarea than assigning catch based on their average harvests in both areas combined. An important decision using this method would be selecting the years to determine the historic dependence in the Aleutian Islands. The example above, allocates trawl CVs only about 30% of their 2002 Aleutian Islands harvest. This shows the importance of selecting the years to be used to calculate the split between the Bering Sea and Aleutian Islands subareas.

One concern that has been expressed regarding Option 1 is that TAC fluctuations would have disproportionate impacts on the sectors that are allocated the greatest percentage of the subarea with the declining TAC. Option 2 mitigates that concern, but creates new issues.

Option 2: Allocate Equal Percentages in Both Areas

NMFS would be directed to allocate sectors the same percentage of the Bering Sea subarea and Aleutian Islands subarea TACs. Therefore, since the hook-and-line CP sector is allocated 40.8% of the BSAI Pacific cod TAC under the current regulations, they would be allocated 40.8% of the Bering Sea TAC and 40.8% of the Aleutian Islands TAC.

Sector allocations in this option are calculated the same as they were under Option 1, except that step 2 would be omitted. In cases where the allocations that are currently in regulation are assigned the same group of vessels as defined in Amendment 80a sectors, the allocation percentages would simply be set at the Bering Sea and Aleutian Islands levels. This is the case for the Hook-and-Line CPs. They would be allocated 40.8% of both subarea's TACs when the current TAC groups are split by subarea. In this example, the Trawl CP allocation would be divided among the Amendment 80a sectors, based on a percentage that must be defined. In Option 1 it was assumed that those percentages were based on relative catch of the sectors in that group. The example used in Option 1 shows that the AFA Trawl CPs harvested 18.1% of the trawl CP total, Non-AFA Trawl CPs harvested 64.5%, and the Surimi & Fillet CPs harvested 17.4% from 1995-2002 (based on catches reported in Table 2). Based on those harvests the sectors would be allocated their percentage of the group's total catch, multiplied by the 23.5% of the TAC that was available to them.

Option 2 solves the problem of disproportionate impacts that result from TAC fluctuations, but may force vessels to fish areas they have not historically fished and do not want to fish. This issue impacts all sectors, but would likely be most onerous on the sectors comprised of smaller vessels. They would be required to travel greater distances to fish in conditions that may not be well suited for their vessels. When this option was discussed at the IR/IU Committee meetings it was generally considered to be inferior to Option 1.

Option 3: No Allocations by Area

Sectors would not be allocated a specific percentage of the individual Aleutian Islands subarea and Bering Sea subarea TACs. Instead, sectors would continue to be issued an overall amount of Pacific cod that could be harvested from the BSAI. That allocation could be fished from either subarea, if TAC is available and the subareas are open to directed fishing. Once the directed fishing allowance for a TAC is reached, for either the Bering Sea or Aleutian Islands, NMFS would issue a closure notice and all the sectors fishing would be required to fish the open subarea if they wanted to participate in the directed fishery for Pacific cod.

This option provides the greatest flexibility for sectors and is, perhaps, the easiest for inseason management. NMFS would not be required to manage separate subarea allocations for each sector. They would only be required to monitor a single harvest limit for each area and use traditional management tools to open and close fisheries. It would provide flexibility to the fleet since they would be able to fish either subarea if they were open.

A possible drawback of this option is that it could cause sectors to race for Pacific cod in the subarea they expect to close first. This could impact a sector's ability to rationalize their harvest, especially if some members of the sector wanted to fish the subarea that is expected to close later in the year. When considering this option the policy makers will need to weigh the negative impacts of a possible race to catch the Aleutian Islands quota versus the flexibility that sectors would be provided when determining where to fish.

Altering TACs for Other Fisheries

A discussion of how the three options discussed above would be implemented for other fisheries is provided next. An important consideration in this discussion is which species will be allocated to sectors. If the TAC of a species or species group is altered that is not allocated to sectors, the issue is moot. The species would be managed as a non-target species. Management options for non-target species that are currently included in Amendment 80a are the current management system, ICAs managed as soft caps, and ICAs managed as hard caps. It is likely that many of the alterations made to TACs will be for the species defined as "non-target".

Assume that rougheye rockfish are broken into two species (rougheye A and rougheye B) and the Council defines them as target species in Amendment 80a. It is unlikely that they will be defined as target species, but that assumption is made in this example to aid the discussion. TACs are set for the BSAI for the two species, and each of the defined sectors is allocated a percentage of the overall TAC.

Option 1 would rely on the same formula defined in Amendment 80a to allocate the two species. That formula will likely be based on the relative catch of the two species over a set of years defined by the Council. Historic catch data for each sector, relative to the catch of all sectors, based on either annual averages or for the entire time period, would be the basis for the calculations. NMFS would be able to calculate each sector's allocation based on that direction from the Council, if the historic catch data breaks out those two species. However, if the same years are used to determine the allocation as is defined in Amendment 80a, the data for those years are unlikely to contain the detail necessary to do the

calculations. In that case, the allocation may need to be based on Option 2, and the Council could revise the allocation percentages on a slower time line as better harvest information becomes available.

Under Option 2, NMFS would use the same percentage that was used to allocate rougheye rockfish before the TAC was split, to allocate the new species. Therefore, if the Non-AFA Trawl CPs sector was allocated 25% of the rougheye rockfish TAC before the split, they would be allocated 25% percent of the TAC for rougheye A and 25% of rougheye B after the split. The outcome does not take differential harvest rates of the two species, by sector, into account.

Finally, Option 3 would set a limit on the amount of the two species that could be harvested by each sector. That limit would be based on their allocation of the two species combined. NMFS would monitor the removal of each TAC and close those fisheries to directed fishing when the TAC available for directed fishing is harvested. All sectors will be required to stop directed fishing for that species when the fishery is closed. They must then harvest their remaining allocation from the rougheye TAC that is open to directed fishing.