C-3
Specs

Public Testimony Sign-Up Sheet

Agenda Item C-3(a-c) GOA and BSAI Specifications

	NAME (PLEASE PRINT)	AFFILIATION
1	Chris Krenz	Oceana
2		
3	George Pletnikoff	Greenpeace
4	Dave Fraser	Adak Fisheries
5	Stephanie Madsen / Brent Paine	Pollock Industry
6	Frank Kelty	City of Unalaska
7	~~Dave Fraser~~	~~Adak Fisheries~~
8	Julie Bonney	AGDB
9	Dave Wood	US Seafoods
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NOTE to persons providing oral or written testimony to the Council: Section 307(1)(I) of the Magnuson-Stevens Fishery Conservation and Management Act prohibits any person " to knowingly and willfully submit to a Council, the Secretary, or the Governor of a State false information (including, but not limited to, false information regarding the capacity and extent to which a United State fish processor, on an annual basis, will process a portion of the optimum yield of a fishery that will be harvested by fishing vessels of the United States) regarding any matter that the Council, Secretary, or Governor is considering in the course of carrying out this Act.

AGENDA C-3(a)
DECEMBER 2008

MEMORANDUM

TO: Council, AP and SSC

FROM: Chris Oliver [signature] for
Executive Director

DATE: December 3, 2008

SUBJECT: BSAI Groundfish SAFE Report and 2009/2010 harvest specifications

ESTIMATED TIME
8 HOURS
(all D-1 items)

ACTION REQUIRED

(a) Final action to approve the 2008 BSAI Stock Assessment and Fishery Evaluation (SAFE) report and final BSAI groundfish harvest specifications for 2009 and 2010:

1. Acceptable Biological Catch (ABC) and annual Total Allowable Catch (TAC)
2. Prohibited Species Catch Limits (PSCs) and seasonal apportionments of Pacific halibut, red king crab, Tanner crab, opilio crab, and herring to target fishery categories
3. Pacific halibut discard mortality rates for the 2009 CDQ fisheries

BACKGROUND

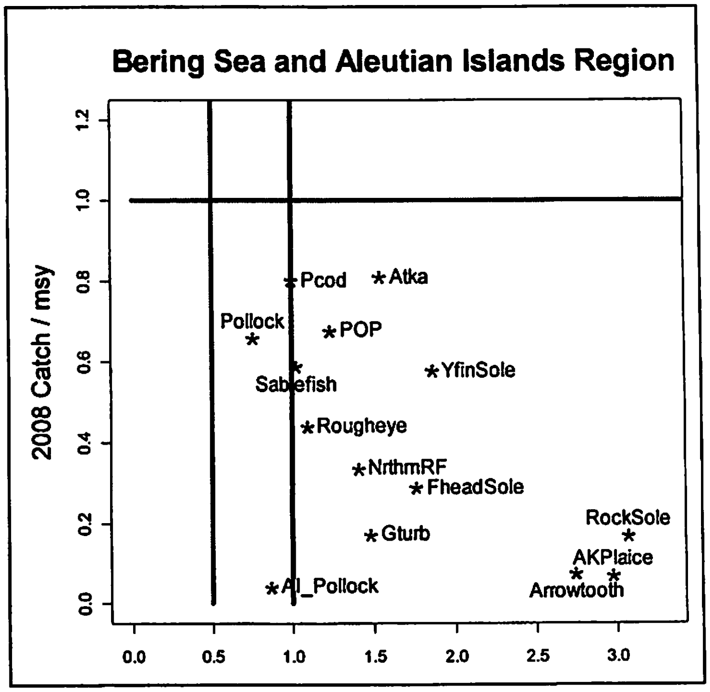
At this meeting, the Council will adopt final recommendations on groundfish and PSC specifications to manage the 2009 and 2010 Bering Sea/Aleutian Islands (BSAI) groundfish fisheries.

BSAI SAFE Report Since 2005, the Council has recommended ABCs and TACs for the next two fishing years. The BSAI Groundfish Plan Team met in Seattle on November 17-21, 2008, to prepare the BSAI Groundfish SAFE report. The SAFE report forms the basis for BSAI groundfish harvest specifications for the 2009 and 2010 fishing years. The introduction to the BSAI SAFE report was mailed to the Council and Advisory Panel in late November 2008. The full report was mailed to the SSC and is available through the Council website.

The Plan Team's recommendations for final specifications for 2009 and 2010 are attached as Item C-1(a)(1). In October, the Council adopted proposed specifications of OFL and ABC for 2009 and 2010 that were based on last year's stock assessments (Item C-1(a)(2)). In this SAFE report, the Plan Team has revised most of those projections due to the development of new models; collection of new catch, survey, age composition, or size composition data; or use of new methodology for recommending ABCs. November 2008 Plan Team minutes are attached as Item C-1(a)(3). The SSC and AP recommendations will be provided to the Council during the meeting.

ABCs, TACs, and Apportionments The Plan Team recommended OFLs and ABCs for 2009 sum to 2,640,000 t and 2,190,000 t, respectively. These totals are approximately 569,000 t and 283,000 t below those in 2008 ABCs. The sum of the recommended ABCs for 2010 is 2,639,000 t, or 166,000 t above the sum of the 2008 ABCs. However, the total groundfish ABC still exceeds the 2 million t cap set by the Council as a conservation measure in setting TACs.

Overall, the status of the stocks continues to appear favorable, although many stocks are declining due to poor recruitment in recent years, especially for pollock and Pacific cod. The total estimated groundfish biomass of 17.2 million t for 2009 declined by 300,000 t from 2008. The bottom trawl survey biomass estimate for pollock in 2008 was 4.3 million t, only 87% of the long-term mean of the bottom-trawl survey. The 2008 echo-integration survey biomass estimate was 1.88 million t, only 55% of the long-term mean for this survey. Both surveys indicate that the 2006 year class is strong and that the 2005 year class is now apparently below average. The biomass estimate from the 2008 bottom trawl survey for Pacific cod of 424,000 t is down about 18% from the 2006 estimate, and is the all-time low. Plan Team ABC recommendations are trending down for gadoids, but generally up for flatfishes. The abundances of AI pollock, sablefish, all rockfishes, all flatfishes, and Atka mackerel are projected to be above target stock size. The abundances of EBS pollock, AI pollock, and Pacific cod are projected to be below target stock size.



The 2004 Consolidated Appropriations Act requires the Council to allocate pollock TAC to the Aleut Corporation for a directed pollock fishery in the Aleutian Islands. Starting in 2005, the Council has recommended a separate Total Allowable Catch (TAC) level of 19,000 t for the AI fishery. A mandatory 10% CDQ allocation (1,900 t) and an incidental catch allowance (ICA) of 1,600 t to cover bycatch of pollock in other AI fisheries were deducted from the TAC. The result is a directed pollock fishery allocation for the Aleut Corporation of 15,100 t. The Council has notified its intent to examine the ICA amount in recommending future AI pollock TACs. The Plan Team recommendation for the AI pollock ABC in 2009/2010 is 15,300 t.

<u>Adopt prohibited species catch limits for Pacific halibut, crab, and herring</u>

Beginning in 2008, the head and gut trawl catcher/processor sector, which targets flatfish, Pacific cod, and Atka mackerel, was allocated groundfish TACs and PSCs among members of the "Amendment 80" sector that joined a cooperative. Regulations now require that crab and halibut trawl PSC be apportioned between the BSAI trawl limited access and Amendment 80 sectors after subtraction of prohibited species quota (PSQ) reserves, as presented in Table 7a for proposed 2009 and 2010 PSCs under <u>Item C-3(a)(4)</u>. Crab and halibut trawl PSC assigned to the Amendment 80 sector is then sub-allocated to Amendment 80 cooperatives as PSC cooperative quota (CQ) and to the Amendment 80 limited access fishery as presented in Tables 7d and 7e. PSC CQ assigned to Amendment 80 cooperatives is not allocated to specific fishery categories. Regulations require the apportionment of each trawl PSC limit not assigned to Amendment 80 cooperatives be assigned into PSC bycatch allowances for seven specified fishery categories. The Council may revise the proposed 2009 and 2010 fishery category allocations for the BSAI trawl limited access and the Amendment 80 limited access sectors as shown in Tables 7b, 7c, and 7e. Specifications for PSCs as shown in Tables 7a and 7d are fixed.

Categories used for prohibited species catch

Trawl fisheries

1. Greenland turbot, arrowtooth flounder and sablefish
2. rock sole, flathead sole, and "other flatfish"
3. yellowfin sole
4. rockfish
5. Pacific cod
6. pollock, Atka mackerel and "other species"

Non-trawl fisheries

1. Pacific cod
2. other non-trawl (longline sablefish and rockfish, and jig gear)
3. groundfish pot (exempt in recent years)

Halibut Trawl Fisheries: The halibut PSC limit can be apportioned to the trawl fishery categories as shown in the box at right. While an overall PSC limit of 3,675 t

Schedule for Halibut Trawl PSC Limits for 2009 - 2010		
	2,475	Amendment 80
	875	Trawl Limited Access
2009	**3,350**	**Total Trawl Halibut Apportionment**
	2,425	Amendment 80
	875	Trawl Limited Access
	50	Added to CDQ Allocation
2010	**3,350**	**Total Trawl Halibut Apportionment**

has been established for trawl gear, Amendment 80 effectively will reduce the PSC limit by 150 mt between 2008 (2,525 t) and 2012 (3,250 t). The PSC apportionments for 2009 and 2010 are shown below. Additional reductions of 5 percent would occur if PSC amounts are transferred from the trawl limited access sector to the Amendment 80 trawl sector.

Halibut Fixed Gear Fisheries: A 900 t non-trawl gear halibut mortality limit can be apportioned to the fishery categories listed in the adjacent box. Beginning in 2008, Amendment 85 divided the halibut PSC limit for the hook-and-line Pacific cod fishery between the hook-and-line CP and CV sectors (CVs ≥60 ft (18.3 m) LOA and CVs <60 ft (18.3 m) LOA combined). The Council can provide varying amounts of halibut PSC by season to each sector, tailoring PSC limits to suit the needs and timing of each sector.

Crab: Prescribed bottom trawl fisheries in specific areas are closed when PSC limits of *C. bairdi* Tanner crab, *C. opilio* crab, and red king crab are taken. A stair step procedure for determining PSC limits for red king crab taken in Zone 1 trawl fisheries based on abundance of Bristol Bay red king crab has been in place. Based on the 2008 estimate of effective spawning biomass of 75 million pounds, the PSC limit for 2009 is 197,000 red king crabs. Up to 25% of the red king crab PSC limit can be used in the 56° - 56°10'N strip of the Red King Crab Savings Area. The red king crab cap has generally been allocated among the pollock/mackerel/other species, Pacific cod, rock sole, and yellowfin sole fisheries.

PSC limits for red king crab and *C. bairdi* Tanner crab

Species	Zone	Crab Abundance	PSC Limit
Red King Crab	Zone 1	< threshold or 14.5 million lb effective spawning biomass (ESB)	33,000
		> threshold, but < 55 million lb of ESB	97,000
		> 55 million lb of ESB	197,000
Tanner Crab	Zone 1	0-150 million crabs	0.5% of abundance
		150-270 million crabs	750,000
		270-400 million crabs	850,000
		> 400 million crabs	1,000,000
Tanner Crab	Zone 2	0-175 million crabs	1.2% of abundance
		175-290 million crabs	2,100,000
		290-400 million crabs	2,550,000
		> 400 million crabs	3,000,000

PSC limits for *bairdi* in Zones 1 and 2 have been based on total abundance of *bairdi* crab as indicated by the NMFS trawl survey. Based on 2008 abundance (435 million crab), and an additional reduction implemented in 1999, the PSC limit in 2009 for *C. bairdi* will be 980,000 (1,000,000 minus 20,000) *bairdi* crab in Zone 1 and 2,970,000 (3,000,000 minus 30,000) crab in Zone 2.

Snow crab (*C. opilio*) PSC limits are based on total abundance of *opilio* crab as indicated by the NMFS standard trawl survey. The cap is set at 0.1133% of snow crab abundance index, with a minimum of 4.5 million snow crab and a maximum of 13 million snow crab; the cap is further reduced by 150,000 crab. The 2008 survey estimate of 2.60 billion crabs results in a 2009 *opilio* crab PSC limit of 2,943,421 crabs, if left unadjusted. However, the crab FMP mandates a minimum of 4,350,000 snow crab. Snow crab taken within the "*C. opilio* Bycatch Limitation Zone" accrues toward the PSC limits established for individual trawl fisheries.

Herring: In 1991, an overall herring PSC bycatch cap of 1 percent of the EBS biomass of herring was implemented. This cap is apportioned to the seven PSC fishery categories. Annual herring assessments indicate there will be very little change in the Bering Sea herring PSC limit for 2009. The herring biomass estimate for spring 2008 for the eastern Bering Sea was estimated to be 169,675 t. The corresponding herring PSC limit for 2009 at 1% of this amount is 1,697 t.

Seasonal apportionment of bycatch limits The Council may also seasonally apportion the bycatch allowances. Regulations require that seasonal apportionments of bycatch allowances be based on information listed in the adjacent box.

Factors to be considered for seasonal apportionments of bycatch allowances.

1. Seasonal distribution of prohibited species;
2. Seasonal distribution of target groundfish species relative to prohibited species distribution;
3. Expected prohibited species bycatch needs on a seasonal basis relevant to change in prohibited species biomass and expected catches of target groundfish species;
4. Expected variations in bycatch rates throughout the fishing year;
5. Expected changes in directed groundfish fishing seasons;
6. Expected start of fishing efforts; and
7. Economic effects of establishing seasonal prohibited species apportionments on segments of the target groundfish industry.

Halibut discard mortality rates Halibut bycatch mortality rates for the 2008-2010 open access fisheries were adopted by the Council in October 2006 and previously implemented in regulations. In November 2008, the BSAI Plan Team recommended that the Council adopt International Pacific Halibut Commission (IPHC) staff recommendations for DMRs for the 2009 BSAI CDQ fisheries (shown in the summary table below). Future rates for CDQ fisheries will be set on a 3-year cycle coincident with the next cycle for the non-CDQ fisheries in 2010 for 2010-2012; Plan Team review of IPHC staff recommendations for the next three-year cycle is scheduled for September 2009.

Recommended Pacific halibut discard mortality rates for 2009 CDQ groundfish fisheries.

Gear/Target	2008 Discard Mortality Rate	2009 Recommendation
Trawl		
Atka mackerel	85	85
Bottom pollock	86	85
Rockfish	82	82
Flathead sole	87	84
Pelagic pollock	90	90
Rock sole	86	88
Yellowfin sole	84	84
Pot		
Sablefish	35	34
Longline		
Pacific cod	10	10
Turbot	4	4

Table 1. Bering Sea Aleutian Islands Groundfish Plan Team OFL and ABC Recommendations for the 2009-2010 Fisheries

Species	Area	2008 OFL	2008 ABC	2008 TAC	2008 Catch	2009 OFL	2009 ABC	2009 TAC	2010 OFL	2010 ABC	2010 TAC
Pollock	EBS	1,440,000	1,000,000	1,000,000	989,895	977,000	815,000		1,430,000	1,230,000	
	AI	34,000	28,200	19,000	1,282	32,600	15,300		36,800	15,300	
	Bogoslof	58,400	7,970	10	9	58,400	7,970		58,400	7,970	
Pacific cod	BSAI	207,000	176,000	170,720	165,477	212,000	176,000		235,000	176,000	
Sablefish	BS	3,380	2,860	2,860	1,088	3,210	2,720		2,980	2,520	
	AI	2,890	2,440	2,440	880	2,600	2,200		2,410	2,040	
Atka mackerel	Total	71,400	60,700	60,700	58,471	99,400	83,800		84,400	71,100	
	EAI/BS		19,500	19,500	19,470		27,000			22,900	
	CAI		24,300	24,300	22,359		33,500			28,500	
	WAI		16,900	16,900	16,642		23,300			19,700	
Yellowfin sole	BSAI	265,000	248,000	225,000	141,431	224,000	210,000		213,000	200,000	
Northern rock sole	BSAI	304,000	301,000	75,000	51,063	301,000	296,000		314,000	310,000	
Greenland turbot	Total	15,600	2,540	2,540	2,727	14,800	7,380		14,400	7,130	
	BS		1,750	1,750	1,905		5,090			4,920	
	AI		790	790	822		2,290			2,210	
Arrowtooth flounder	BSAI	297,000	244,000	75,000	21,417	190,000	156,000		196,000	161,000	
Flathead sole	BSAI	86,000	71,700	50,000	24,230	83,800	71,400		81,800	69,800	
Other flatfish	BSAI	28,800	21,600	21,600	3,616	23,100	17,400		23,100	17,400	
Alaska plaice	BSAI	248,000	194,000	50,000	19,427	298,000	232,000		354,000	275,000	
Pacific Ocean perch	BSAI	25,700	21,700	21,700	17,440	22,300	18,800		22,100	18,600	
	BS		4,200	4,200	513		3,820			3,780	
	EAI		4,900	4,900	4,698		4,200			4,160	
	CAI		4,990	4,990	4,812		4,260			4,210	
	WAI		7,610	7,610	7,417		6,520			6,450	
Northern rockfish	BSAI	9,740	8,180	8,180	3,290	8,540	7,160		8,580	7,190	
Shortraker	BSAI	564	424	424	151	516	387		516	387	
Blackspotted/ Rougheye	BSAI	269	202	202	207	660	539		640	552	
Other rockfish	BSAI	1,330	999	999	586	1,420	1,040		1,420	1,040	
	BS		414	414	199		485			485	
	AI		585	585	387		555			555	
Squid	BSAI	2,620	1,970	1,970	1,542	2,620	1,970		2,620	1,970	
Other species	BSAI	104,000	78,100	50,000	28,489	80,800	66,700		80,700	63,700	
Total	BSAI	3,205,693	2,472,585	1,838,345	1,532,718	2,636,766	2,189,766		3,162,866	2,638,699	

2008 catches through November 8 from AKR Catch Accounting including CDQ.

Notes: Other rockfish exludes dark rockfish, pending Secretarial approval of BSAI Amendment 77 (add 30 t to AI to get total other rockfish ABC of 555 t).

TABLE 1– PROPOSED 2009 AND 2010 OVERFISHING LEVEL (OFL), ACCEPTABLE BIOLOGICAL CATCH (ABC), TOTAL ALLOWABLE CATCH (TAC), INITIAL TAC (ITAC), AND CDQ RESERVE ALLOCATION OF GROUNDFISH IN THE BSAI[1]

[Amounts are in metric tons]

Species	Area	Proposed 2009 and 2010				
		OFL	ABC	TAC	ITAC[2]	CDQ[3,4,5]
Pollock[3]	BS	1,320,000	1,000,000	1,000,000	900,000	100,000
	AI	26,100	22,700	19,000	17,100	1,900
	Bogoslof	58,400	7,970	10	10	0
Pacific cod[4]	BSAI	207,000	176,000	170,720	152,453	18,267
Sablefish[5]	BS	2,910	2,610	2,610	1,109	98
	AI	2,510	2,230	2,230	474	41
Atka mackerel	BSAI	50,600	47,500	47,500	42,418	5,083
	EAI/BS	n/a	15,300	15,300	13,663	1,637
	CAI	n/a	19,000	19,000	16,967	2,033
	WAI	n/a	13,200	13,200	11,788	1,412
Yellowfin sole	BSAI	296,000	276,000	225,000	200,925	24,075
Rock sole	BSAI	379,000	375,000	75,000	66,975	8,025
Greenland turbot	BSAI	16,000	2,540	2,540	2,159	n/a
	BS	n/a	1,750	1,750	1,488	187
	AI	n/a	790	790	672	0
Arrowtooth flounder	BSAI	300,000	246,000	75,000	63,750	8,025
Flathead sole	BSAI	83,700	69,700	50,000	44,650	5,350
Other flatfish[6]	BSAI	28,800	21,600	21,600	18,360	0
Alaska plaice	BSAI	277,000	217,000	50,000	42,500	0
Pacific ocean perch	BSAI	25,400	21,300	21,300	18,845	n/a
	BS	n/a	4,100	4,100	3,485	0
	EAI	n/a	4,810	4,810	4,295	515
	CAI	n/a	4,900	4,900	4,376	524
	WAI	n/a	7,490	7,490	6,689	801
Northern rockfish	BSAI	9,680	8,130	8,130	6,911	0
Shortraker rockfish	BSAI	564	424	424	360	0
Rougheye rockfish	BSAI	269	202	202	172	0
Other rockfish[7]	BSAI	1,290	968	968	823	0
	BS	n/a	414	414	352	0
	AI	n/a	554	554	471	0
Squid	BSAI	2,620	1,970	1,970	1,675	0
Other species[8]	BSAI	104,000	78,100	50,000	42,500	0
TOTAL		3,191,843	2,577,944	1,824,204	1,624,168	172,891

[1] These amounts apply to the entire BSAI management area unless otherwise specified. With the exception of pollock, and for the purpose of these harvest specifications, the Bering Sea (BS) subarea includes the Bogoslof District.

[2] Except for pollock, the portion of the sablefish TAC allocated to hook-and-line and pot gear, and Amendment 80 species, 15 percent of each TAC is put into a reserve. The ITAC for these species is the remainder of the TAC after the subtraction of these reserves.

[3] Under § 679.20(a)(5)(i)(A)(1), the annual Bering Sea subarea pollock TAC, after subtracting first for the CDQ directed fishing allowance (10 percent) and second for the incidental catch allowance (3.5 percent), is further allocated by sector for a directed pollock fishery as follows: inshore - 50 percent; catcher/processor - 40 percent; and motherships - 10 percent. Under § 679.20(a)(5)(iii)(B)(2)(i) and (ii), the annual Aleutian Islands subarea pollock TAC, after subtracting first for the CDQ directed fishing allowance (10 percent) and second for the incidental catch allowance (1,600 mt), is allocated to the Aleut Corporation for a directed pollock fishery.

[4] The Pacific cod TAC is reduced by three percent from the ABC to account for the State of Alaska's guideline harvest level in State waters of the Aleutian Islands subarea.

[5] For the Amendment 80 species (Atka mackerel, Aleutian Islands Pacific ocean perch, yellowfin sole, rock sole, flathead sole, and Pacific cod), 10.7 percent of the TAC is reserved for use by CDQ participants (see §§ 679.20(b)(1)(ii)(C) and 679.31). Twenty percent of the sablefish TAC allocated to hook-and-line gear or pot gear, 7.5 percent of the sablefish TAC allocated to trawl gear, and 10.7 percent of

the TACs for Bering Sea Greenland turbot and arrowtooth flounder are reserved for use by CDQ participants (see § 679.20(b)(1)(ii)(B) and (D)). Aleutian Islands Greenland turbot, "other flatfish," Alaska plaice, Bering Sea Pacific ocean perch, northern rockfish, shortraker rockfish, rougheye rockfish, "other rockfish," squid, and "other species" are not allocated to the CDQ program.

[6] "Other flatfish" includes all flatfish species, except for halibut (a prohibited species), flathead sole, Greenland turbot, rock sole, yellowfin sole, arrowtooth flounder, and Alaska plaice.

[7] "Other rockfish" includes all Sebastes and Sebastolobus species except for Pacific ocean perch, northern, shortraker, and rougheye rockfish.

[8] "Other species" includes sculpins, sharks, skates, and octopus. Forage fish, as defined at § 679.2, are not included in the "other species" category.

DRAFT BSAI Groundfish Plan Team Minutes
AFSC- Seattle, WA
November 17-21, 2008

Loh-Lee Low (AFSC), Chair
Grant Thompson (AFSC), Special Envoy to the SSC
Mike Sigler (AFSC), Vice-chair
Jane DiCosimo (NPFMC), Coordinator
Dave Carlile (ADF&G)
Mary Furuness (AKRO)
Dana Hanselman (AFSC)
Alan Haynie (AFSC)
Brenda Norcross (UAF)
Leslie Slater (USFWS)
Kerim Aydin (AFSC)
Brenda Norcross (IPHC)
Lowell Fritz (NMML)
David Barnard (ADF&G)
Yuk W. (Henry) Cheng (WDFW)

The BSAI Groundfish Plan Team convened on Monday, November 17, 2008, at 2:00 pm. The Team welcomed new members Dana Hanselman and Alan Haynie. Thirty five members of the public and ten agency staff attended parts of the meeting. The Team adjourned by 4 pm on Friday, November 21, 2008. Mike Sigler acted as chair, as Loh-lee Low attended the meeting only during the EBS pollock and Pacific cod reviews because his participation was required at two other management-related meetings.

EBS pollock Jim Ianelli presented results of the 2008 assessment. He comprehensively reviewed all new data going into the model, the assessment history and current stock status, and projections of productivity estimates. Both the bottom-trawl and acoustic surveys were conducted in 2008, as they have been for each of the last three years (acoustic surveys are normally conducted every other year). Survey estimates of pollock biomass were down from last year and bottom temperatures were far colder than average for the third consecutive year. Jim reported that the fishery catch during the B-season was more concentrated in the northwest region of the eastern Bering Sea (west of 170°W), similar to last year. In general, this can result in a trend where younger pollock represent a larger fraction of the catch. These shifts are reflected in the model as changes in selectivity, so that appropriate levels of spawning biomass are conserved in subsequent yield calculations. Relative to the 2008 ABC of 1.0 million t, the lower 2009 ABC value (of 815,000 t) is due to a combination of biomass differences and revisions in the estimates of age composition based on new data available for the current assessment.

To determine the influence of new data, Jim ran separate models, sequentially adding in the new observations from each data set. This process (referred to as "CABE" in the assessment) illustrated the sensitivity of new data to the yield estimates, particularly since the stock is below the target B_{MSY} level. In 2009 and 2010 both the acoustic and bottom-trawl surveys will be conducted as part of the NPRB BSIERP program. This will be very timely, and will allow abundance trends and fishery impacts to be monitored closely.

The Team concurred with the author that age 3+ biomass of EBS walleye pollock has declined steadily since 2003 due to poor recruitment in five consecutive years. The team agrees with the author that the 2006 year class is reliably estimated to be above average. In last year's assessment, the 2006 year class was estimated to be large, and this year it is estimated to be about double the average value, with less uncertainty than estimated last year. The team noted that the stock could be considered in a healthy state since an above average year class is a clear sign of continued reproductive capability. That the 2008 spawning biomass is apparently at its lowest level in twenty years is a concern. However, based on reliable data, spawning biomass is projected to increase in 2009 as the 2006 year class matures. The author commented that the relative contribution of the 2006 year class to the projected overall abundance for 2009 is not uncommon and that this stock has experienced a number of periods where the age structure was even less diverse.

Both the bottom trawl survey and the hydroacoustic survey tend to catch age 1 pollock if the year class is relatively strong. Once they are age 2, however, pollock become less available to the bottom trawl survey but continue to be picked up in the hydroacoustic survey. After 2 years of age, pollock tend to become increasingly demersal. As a result, older pollock become less available to the hydroacoustic survey gear with age and more available to the bottom trawl survey. Vertical distributions of pollock by age and relative to temperature conditions were described as being potentially important factors in considering the availability of pollock to different survey approaches.

Henry Cheng recommended the "CA" run of the model because it is more conservative, because the "CABE" run of the model dilutes the impact of the catch and age data (by considering additional data), and because much of the area is unfished; he suggested that perhaps an unexploited population component exists somewhere. However, spatial exploitation of pollock is widespread and the unexploited fraction of the stock's geographic distribution is small. Ignoring the current year's survey estimates for this assessment would set a precedent which, if adopted, would raise the question of whether a similar policy should be applied to all other assessments. Most Team members preferred to keep all the data in the model. The Team adopted the author's recommendation for the CABE version of the model.

The Team supports the author's recommendation to set 2009 ABC at the maximum permissible level of 815,000 t. The Team considered recommending a lower value based on tier 3, but concluded that the maximum permissible level is sufficiently conservative for the following reasons:

- A 2009 ABC of 815,000 t will keep the spawning exploitation rate within the range experienced during the 1979-2005 period, and below the comparatively high values experienced in 2006-2008.
- The Tier 1 harvest control rules already have a built-in precautionary adjustment for stocks that fall below B_{MSY}.
- Uncertainty is already factored into the Tier 1 harvest control rules.
- A 2009 ABC of 815,000 t constitutes a large (18%) reduction from the 2008 ABC of 1 million t and would result in greater short-term catch stability than a lower ABC.
- The strength of the 2006 year class, estimated for the first time in last year's assessment, has been confirmed after a second year of survey observations, and the confidence interval has tightened considerably in the present assessment. A strong 2006 year class following weak 2001-2005 year classes would also be consistent with the hypothesis that the 2006 year class was affected positively by both decreased temperature and increased copepod abundance.
- Under a 2009 ABC of 815,000 t, the stock is expected to return to near B_{MSY} by 2010 if the stock is fished at the maximum permissible level.

The team noted ecosystem considerations related to prey availability and subsequent survival of pollock (and other apex predators) which the Council could consider in its decision for setting TAC. Loh-lee Low observed that we have seen higher exploitation rates in earlier years and the stock did not crash. The stock rebuilt successfully in the past when catch was 1 million t. The 18% reduction in ABC between 2008 and 2009 is in line with model results and overall data trends.

Lowell Fritz observed that higher than average fur seal pup weights were associated with high abundance of age 1-5 pollock (for adult female fur seals); pollock are not "junk food." He supported an ABC set under tier 3 (458,000 t). He supported fishing at an ABC set under tier 3 (458,000 t). He supported fishing at $F_{40\%}$ for two reasons related to the history of pollock recruitment: 1) there is not a strong relationship between the biomass of spawners and the abundance of age 1 recruits; it is the strength of this relationship that provides confidence that F_{MSY} is the appropriate harvest strategy; and 2) the distribution of strong year classes is more evenly distributed around $B_{40\%}$ than B_{MSY}. Significantly, the only big year class associated with a spawning biomass that was less than B_{MSY} was the 1978 year class (30 years ago), while both the strong 1978 and 1992 year classes were associated with spawning biomasses less than $B_{40\%}$.

Kerim Aydin expressed similar concerns as those expressed by Lowell, although he noted that a few signs were more encouraging than in the past two years, namely: 1) the tier 1 recommended exploitation rate would in fact be lower than it has been for the last two years and 2) while the climate since 2001 remains highly uncertain, several signs, including pollock surveys as well as climate and plankton conditions, seem to indicate that the 2006 year class is in fact above average, so that even if the stock has entered a period of low productivity, the 2006 year class may provide a temporary buffer against uncertainty. He noted that concern may be greater in the southeast and around Pribilof Islands, due to the northward shift of the population in conjunction with concern for island-based seabirds and marine mammals that rely on pollock for prey.

The Team emphasized that next year's recommendation for the 2010 ABC is dependent on continued confirmation of the strength of the 2006 year class and subsequent year class strengths. If the 2006 year class is only average, then the current projection for the 2010 ABC under tier 1b would drop to 960,000 t.

One member of the public recommended a lower ABC than the Plan Team recommendation.

Bogoslof pollock Jim Ianelli reported that the standard assessment approach for this species was applied again this year. A biennial cycle for the survey and assessment began this year. The *Oscar Dyson* tentatively is scheduled for a survey in March 2009. Acoustic survey biomass is about 250,000 t during recent surveys. The 2007 EIT survey results have been published in a NOAA technical memorandum. The Team accepted the author's recommendation for OFL and ABC under Tier 5 and noted that the ABC value follows the SSC's alternative which is less than the maximum permissible.

Aleutian Islands Steve Barbeaux presented a new model configuration for AI pollock, based on several recommendations from the 2008 CIE review (also conducted for Atka mackerel). Eight changes to the model were noted. The reference model addressed the entire NRA (Near, Rat, and Andreanof Islands) region, compared with past reference models that covered just the Eastern NRA west of 174° W. Besides annual catch amounts, no new data have been incorporated into the model since 2006. The directed fishery started in the 1980's in the north and east, but sequentially moved west in the 1990s. The authors reported 400 t of harvest in the directed fishery and 1,100 t of incidental catch. Large catches occurred in the 1980s and 1990's. The directed fishery closed in 1999 and then reopened in 2005. Catches since the fishery reopened have been small. The AI BT Survey biomass estimates have decreased in the last two surveys but are highly uncertain. The 2008 Aleutian Islands Cooperative Acoustic Survey Study (AICASS) saw pollock concentrations in the same locations as in 2006 and 2007; pollock were slightly larger than the previous two years.

In the stock assessment the authors present six different model configurations. Of these six the authors ultimately selected the configuration with the worst likelihood fit. The authors selected this model as the reference model based on the best biological explanation for selectivity, with a model that has selectivity asymptote at 8 years of age, which is the age that corresponds to the pollock length at 90% of $L_{infinity}$. All models fit poorly to the BT survey biomass estimates. There are large differences in total and spawning biomass between the entire NRA and western NRA region. A decline in mid-1990s for all AI stocks stabilized after 1999. Year class strength has been below average since 1983. A very large 1978 year class can be seen in the population and fishery through the early to mid-1990s. The regulatory cap of 19,000 t appears conservative.

The use of all NRA catch data in the reference model greatly inflated the estimated biomass in the 1980's, thus inflating the reference points such that the decline in the stock in the 1990's was much greater than estimated in previous years assessments. The Gulf of Alaska maturity schedule used in this year's assessment resulted in a lower proportion mature at age for younger fish, therefore reducing the estimated female spawning biomass in proportion to the total in comparison to last year's assessment. Changes to the fishery selectivity-at-age vector used in the projection model impacted the older aged fish (10+) relative to last year's assessment resulting in changes in $F_{40\%}$ and $F_{35\%}$.

Dave Benson asked why there is a bigger buffer between ABC and OFL in 2009 than in 2010. In response, the authors noted (later) that this was a transcription error for 2010 and this was revised in the current draft.

The CIE report, which led to the new model configuration, was presented at the September 2008. meetings and the modifications were anticipated. Therefore, the Team accepted the model as presented even though the changes were substantial. The Team also agreed with the author's choice of model configuration which used constant selectivity and specification of selectivity for ages 8 and older to be the same. The new model applied Tier 3b whereas Tier 3a was applied last year.

The Team recommends exploring productivity changes in the stock and future recruitment uncertainty by computing five year population projections with 1) standard 78+ and 2) 1990+ year classes. The CIE recommended using entire time series since there is no reason to assume 1978 was an anomaly. The Team adopted the revised author's recommendations for OFL/ABC. Council policy is to set TAC at a maximum of 19,000 t (or lower if the ABC is lower). The Team recommended that the ABC be set at the tier 5 level of 15,300 t. The 2010 OFL and ABC were derived assuming a 2009 catch of 2,000 t. The Team recommends that a survey in the Aleutian Islands continue to be conducted; the assessment model requires contemporary survey results to update the model, and a lack of new data results in a less precautionary ABC.

Pacific cod The presentation of the EBS and GOA cod assessments by Grant Thompson is summarized in the joint Team minutes. The Team agrees with the author's approach for choosing selection functions that are asymptotic ("asymptotic algorithm") and for incorporating age data into his preferred model (Model B1), which estimated an age/length (growth) relationship internally. The Team accepted the author's recommendation for maintaining ABC at 176,000 t for 2009 and 2010. Some of the discussion leading to these decisions is captured in the following summary.

Following a suggestion from the 2007 technical workshop, both last year's and this year's assessments have forced the selection function for at least one fishery to reach an asymptote (i.e., fishery selection increases with age to a maximum, and once at the maximum, stays at the maximum) in order to stabilize the model. Mark Maunder suggested that the model may have set too many fishery selection functions as asymptotic. He noted that fisheries with large sample sizes may have more influence on model stability than fisheries with large catches. Grant agreed, although he also clarified that this is not an issue in the case of Pacific cod, because the same fisheries are identified as "major" regardless of whether the ranking is done in terms of sample size or catch. Mark suggested three additional paths to pursue in specifying which fisheries or surveys should be allowed to exhibit dome-shaped selectivity: 1) run the survey length frequencies through the same procedure as was done for the fishery; 2) instead of making a single, time-invariant determination for each of the nine fisheries, repeat the entire analysis for all nine fisheries separately for each 5-year time block (although this would further complicate an already complicated model); and 3) examine the tag data, which provide information about the availability of older fish. Mark reiterated his past recommendation that the age data not be included in the model until the discrepancy between mean length-at-age implied by the length and age data is worked out.

Jack Tagart believes the survey, rather than one of the fisheries, should have an asymptotic selection function. He suggested that the fishery that catches the largest fish may still not really exhibit asymptotic selectivity; it is theoretically possible for all fisheries to exhibit dome-shaped selectivity, with some selectivity curves simply being more strongly domed than others. Jack asked Grant whether he would continue to force at least one fishery in the model to exhibit asymptotic selectivity even if he knew for a fact that all fisheries in reality exhibited dome-shaped selectivity. Grant responded that he probably would not; however, given that this hypothetical question presupposes a state of knowledge that does not exist, and given that it has thus far proven extremely difficult to stabilize the model without forcing at least one fishery to exhibit asymptotic selectivity, it is appropriate to retain the assumption of asymptotic selectivity for at least one fishery.

The Team encouraged the AFSC to document the accuracy of the age data. Dan Kimura noted that the BSAI age data fit the length frequency modes better than occurs in the case of the GOA age data. The

Team noted that, for a decade, it had asked for the age data to be incorporated into the assessment model, so the Team does not want to exclude the age data unless there are compelling reasons to do so.

Most Team members felt that the externally estimated value of natural mortality, M = 0.34, is a reasonable choice. The convention in North Pacific assessments is to fix M. The Team noted that models B1 and C1 were equally compelling; with the only difference between them is the values of M, 0.34 and 0.33, respectively.

Mike Sigler summarized two points for accepting the author's M: 1) the convention is to fix M because dead fish cannot be observed, and natural mortality, catchability and the degree of dome–shape in the selection function are confounded; and 2) new age data motivated the change in the assumed value of M from 0.37 to 0.34.

Mike also summarized the ABC choices for the Plan Team to consider: 1) maximum permissible; 2) constant catch; and 3) downward adjustment from last year's ABC, assuming that the model has the scale right and biomass is trending downwards. Henry Cheng recommended setting a lower ABC for more conservation based on: 1) the trawl survey biomass estimate is at an all time low; and 2) the strength of the 2006 year class can only be gauged from 2007 and 2008, and the estimated size of the year class declined in 2008. The Team debated whether there is reason for more pessimism now than last year. The Team noted that under the ABC control rule, the current model already incorporates the revised year class strength, the decrease in survey biomass, and the F rate adjustment under Tier 3b management. The Team considered whether to adopt the maximum ABC and recommend that the Council consider a TAC reduction, but concluded that uncertainty in the model warrants an ABC adjustment, rather than solely a TAC consideration. The maximum ABC is only 3.4% higher than author's recommendation. Kerim Aydin summarized two uncertainties to be considered: 1) model uncertainty - there are a few reasonable models (B1 and C1 have similar weights) and 2) process uncertainty - what is the model not tracking in the ecosystem - a) extremely cold back-to-back years; b) unusual environmental conditions, but certainly not increasing biomass.

Mary Furuness reported that the B season weekly catch rates were quite a bit lower in 2008 by a couple thousand tons a week. In response, Kenny Downs reported that 2006 and 2007 were exceptionally high catch years, and 2008 was a normal B season.

Pacific cod split The Team briefly discussed the SSC decision in October 2008 to set a combined BSAI OFL and separate BS and AI ABCs for Pacific cod. The SSC did not identify in which fishing year it would recommend the area split be implemented. Jane DiCosimo summarized the management implications on current regulations that regulate the cod fishing sectors and affects on endangered species (SSL) if the ABC split occurred prior to Council action to revise the allocations, which is scheduled for Council discussion in December 2008. A new analysis to amend current regulations would be prepared in 2009. The Team noted that there was no conservation emergency for the Council to split management of BSAI Pacific cod into separate ABCs for EBS and AI in December 2008.

Sablefish The joint Team discussion on sablefish can be found in the joint Team minutes. The BSAI Team adopted the author's recommendations for the model, tier level, and OFL and ABC recommendations for the EBS and AI.

Greenland turbot Jim Ianelli summarized the assessment and results of the 2008 slope trawl survey. He applied a simplified Tier 5 approach in this year's model to contrast with a Tier 3 computation from the age-structured model (which uses an earlier version of Stock Synthesis 2). The Team recommended the age-structured model as with past years.

The stock appears to be still decreasing, consistent with the general decline since the mid 1970s. The biomass estimate for the 2008 slope survey was lower compared to 2002 and 2004 (particularly at 400-600 m depth). The EBS shelf bottom trawl survey generally has smaller fish and after ten years of poor recruitment signs, there appears to be young fish entering the population. Fishing mortality has remained very low but has recently shifted to larger fish.

There are marked differences between survey and model biomass estimates; more fish are estimated in the model (a sum of recent average surveys give a total biomass that is about 67% of the total model biomass). This could be due to the absence of large females in the survey gear. *The Team encouraged the authors to further investigate sources for these differences*. The model implies that some fish are not being caught in the survey, or that fishing mortality or natural mortality is much higher on females. A larger fish can avoid trawl gear easier, but may be fully selected by longline gear. Similar selectivity pattern as in the slope survey supports the supposition that there are fewer large females because this occurs irrespective of gear type.

Catches are low (<3,000 t). The fleet targets pre-spawning aggregations; the fishery opens May 1 and usually occurs June-Aug in the EBS to avoid killer whale predation; *this predation should be mentioned in the assessment*. The trawl fishery was bycatch only until 2008, with about half the TAC taken by this fishery. Amendment 80 now allows a trawl fishery to be conducted; effort had dropped due to poor flesh quality. The trawl fleet takes more males (except in 2007 when the sex ration was 50/50).

The Team concurred with the author's recommendation to increase the ABC over last year's ABC, but did requested a modification from the author's proposed ABC. Last year, the Team recommended not increasing the ABC because the slope survey in 2006 was canceled; the Team used a five year average fishing mortality range and set ABC at 21% of maximum permissible ABC, due to stock structure and model uncertainty. This year the Team followed SSC advice to consider increasing ABC upon reviewing new slope survey results. The Team also balanced favorable recruitments from the 2008 slope survey with the differences noted in biomass estimates and uncertainties in stock trends.

The Team recommended a stair-step increase in ABC towards the maximum permissible value. The step for 2009 would yield an ABC that is 60% of the maximum permissible ABC, which is approximately half-way between the 2008 ABC recommendation of 21% of maximum permissible and 100% of maximum permissible. The author provided these calculations and concurred with the Team's recommendation.

The Team also recommended continuing the stair-step increase in ABC up to the maximum permissible ABC in 2010, *only if* there is a 2010 survey. If no survey occurs in 2010 the Team recommends maintaining the 2009 ABC for 2010. A 2010 survey would allow verification of increased recruitment and biomass since the slope encompasses the main habitat for the species and is a good index of the population.

The Team noted that the author's 2010 OFL/ABC recommendations are lower than for 2009 despite an expected increase in recruitment. *The Team recommended that the author explore 1) the scale of biomass estimated by the model and 2) the proposed ABC effect of recent recruitment indicated by the 2009 fishery.*

Arrowtooth flounder Tom Wilderbuer presented the assessment for the assemblage of arrowtooth flounder and Kamchatka flounder; the former is the indicator species. The assessment includes the 10 Aleutian Islands surveys and the survey size composition for the species. Including AI data added after 2006 resulted in different estimates of spatial distribution; only 72 % of the stock is estimated from the Bering Sea shelf, 18% from the Aleutian Islands, and 10% from the Bering Sea slope. Good year classes occurred during 1995-2003. The BT survey biomass was up 7%. About 43% of the 2007 catch was retained (the trend is generally upward, but variable). The model includes a larger estimate of survey catchability this year, due to a new functional form describing the relationship between catchability and temperature. A reformulation of catchability now allows an estimate of the constant or time-independent estimate of survey catchability, and has the effect of reducing the estimates of female spawning biomass and total biomass from the 2007 assessment. The Team concurred with the authors that there is insufficient data for this stock to elevate the assessment to Tier 1 status.

The Team accepted the model and author's recommendations for OFL and ABC. The Team supported completion of the spatial and temporal analysis of arrowtooth and pollock distributions being undertaken by Stephani Zador and Kerim Aydin.

Northern Rock sole Tom Wilderbuer summarized the results of the assessment. Rock sole has been managed under Tier 1 beginning in 2007. He reviewed additional data to the model. He added a split-sex component to the model in this assessment. The Team supports the author's recommendation using Model A, and the corresponding OFL and ABC recommendations for 2009 and 2010. The Team recommended that the author continue to pursue further analysis as to why arithmetic and harmonic means of F_{MSY} (and thus estimates of OFL and ABC) are within 4,000 mt. The constant selectivity assumption may cause this narrowness and the assessment authors plan to explore time-varying selectivity in next year's assessment. This is not a management concern because the catch does not approach the ABC.

Flathead sole Buck Stockhausen summarized the results of the assessment. The assessment includes 0.1 percent of the assemblage catch as Bering flounder. The Team discussed its recommendation from November 2007 that Bering flounder be moved from the flathead sole assessment into the other flatfish assessment. The flatfish authors responded that Bering flounder was poorly distinguished from flathead sole, particularly in the longline fishery. Industry members concurred that the two species were not separately identified. In response, the Team agreed to continue to keep Bering flounder in this chapter and to request the author to identify that this chapter addresses the flathead sole complex, with flathead sole as the indicator species and Bering flounder included in the complex.

The author reviewed model runs that allowed for a one-year time lag in the relationship between bottom trawl catchability and bottom temperature and recommended an additional year of investigation of temperature-dependent q before accepting the new relationship between temperature and abundance for setting specifications. He also tested three recruitment models. The author recommends staying with Tier 3 and continuing to regard recruitment as independent of stock size until the issue of different production regimes can be resolved. Low spawning biomasses and high recruitment occur in the early part of the time series, while high biomasses and low recruitment occur in the latter part. He mentioned plans for conducting management strategy evaluations in 2009.

The Team concurs with the author's model recommendation. The Team agreed with continuing to test the one- year time lag assumption. The author also suggested that the current approach to estimating a stock/recruit relationship within the assessment model may not be optimal. Next year, he plans to compare approaches that estimate the stock/recruit relationship inside the assessment model (as part of the overall minimization of the model's objective function) and outside the assessment model as a post-processing procedure after the assessment model has been run (i.e., as completely independent of the minimization of the assessment model's objective function).

Henry Cheng noted that using both AIC or corrected AIC (AICc) to select the best sub-model will tend to over-parameterize the selected sub-model. In addition, the likelihood used must be a normalized likelihood when we use AIC or AICc. But the normalized constant of the likelihood is unknown in the model. The Team suggested that the authors conduct student t-tests at all the estimated parameters of the selected sub-model. If all the estimated parameters are significant ($P<0.05$), then it is the best sub-model. Otherwise, the authors should consider dropping the non-significant term(s).

Yellowfin sole Tom Wilderbuer summarized the results of the assessment. Yellowfin sole (YFS) has been managed under Tier 1 starting with the 2007 fishing year. He reviewed additional data incorporated into the model. The author recommends the base model. Allowing M to be estimated as a free parameter for males with females fixed at 0.12 provides a better fit to the sex ratio estimated from the annual trawl survey age compositions than does the base model. Since the population sex ratio annually observed at the time of the survey is a function of the timing of the annual spawning in adjacent inshore areas, providing the best fit to these observations may not fit the population sex ratio better. The author does not support Alternative 2 model because the trawl survey does not measure sex ratio accurately for YFS. He noted that the survey does measure sex ratio accurately for rock sole. He noted that rock sole do not have the same spawning behavior as YFS. The timing of spawning also confounds the results. Spawning distribution of YFS is nearshore, which is not sampled by the survey.

Dana Hanselman noted that the log-likelihood increased when the yellowfin sole model changed to a split-sex version, which is surprising given that the number of parameters increased. It may be that splitting the age and length data, previously categorized as unsexed, into male and female components, increased the amount of log-likelihood associated with the age and length data. The Plan Team requests that the assessment authors check for this effect and if operating, consider whether the log-likelihood weighting for the age and length data should be decreased as a consequence.

Henry Cheng noted that the ratio of the estimated values of M, estimated outside the assessment model, and k are outside the range of usual ratios. The usual range of ratios are in the vicinity of M = 1.5K based on Jensen (1996). For indirect methods of estimating natural mortality, Jensen (1996) developed the relationship for estimating natural mortality from growth relationships of M=1.5K. The Plan Team requests that the assessment authors consider whether this range is biologically reasonable and if not, explore the effect of restricting the model to a reasonable M:K ratio. K was estimated from the von Bertallanfy fit to age at length data; this analysis was completed several years ago. The author will update the estimate of K with all age data in response to Dr. Cheng's concern.

Alaska plaice Tom Wilderbuer updated the model similar to one for Arrowtooth flounder. He tested for a temperature effect on bottom trawl biomass estimates and found that, ocean temperature seems unrelated to catchability of Alaska plaice. There were very strong year classes in 2000 and 2001. Tom noted that the stock was increasing, but that estimated biomass decreased in this year's model compared to last year's model because the high numbers of small fish observed last year was not observed in this year's BT survey. The species has an exploitation rate of less than 1%. More than 80% are discarded, but the discard trend is downward (which is consistent for all Amendment 80 species). He noted that the recommended F is high because the species are selected by the fishery at a much later age than when maturation occurs. The Team accepted the model and author's recommendations for OFL and ABC. A split sex model is planned in the future.

Other flatfish The Team accepted the model and the author's recommendations for OFL and ABC using Tier 5. The Team noted that the butter sole catch was estimated to be higher than the biomass estimate in some years, although it noted that the species was at the periphery of its range. The author reviewed big changes in the contributions of different species to total other flatfish biomass since the early 1980s. For next year, the Team recommended that the author provide plots of spatial distribution of biomass with fishery catches for butter sole.

Squid Olav Ormseth summarized the squid chapter. The Team recommended its past approach for setting OFL and ABC. Olav presented fishery length composition data and maps of squid catch distributions. He suggested that a request be made to the observer program to identify squid to species in catches. The Team requested that any changes to the assessment, including new data sources, be scheduled for presentation and discussion at the September meeting. Olav reminded the Team that the Council has initiated a FMP amendment to possibly move squid into the forage fish category. Jane DiCosimo responded that the analysis might be 2-3 years in the future.

Skates Olav Ormseth presented the skate assessment. Area 521 (outer shelf) has the highest skate catches, and the total skate biomass estimate from the trawl surveys has been declining since the mid-2000's. Pacific cod longline and flatfish trawl fisheries have the largest incidental catches. Skate catch has increased in the pollock fishery, as the fleet targets older populations of pollock which are found closer to the bottom. The author responded to SSC comments with the following improvements to the model: 1) the steepness of the Beverton-Holt stock-recruit relationship was fixed at 1.0; 2) the standard deviation of log recruitment was fixed at 0.4; 3) selectivity at age was modeled as a logistic function; 4) independent estimates of survey selectivity were incorporated; and 5) survey catchability was fixed at 1.0 and a logistic function for survey length selectivity was fixed so that the selectivity matched the results of an independent analysis of skate capture probability. The author also discussed possible explanations for the model underestimating length at age for older skates. The Team accepted the model and the authors' recommendation for tier 3 management for Alaska skates and tier 5 management for "other skates." For next year, the author will again explore the use of Stock Synthesis 3, if the new version successfully adds other growth functions appropriate for skates. He also will explore placing priors on catchability.

Sharks. Jon Heifetz briefed the Team on the shark chapter. Most unidentified sharks are likely to be unidentified spiny dogfish, salmon sharks, and sleeper sharks, as they are most frequently caught. Mike Sigler suggested that the authors add P values to the lines fitted to the abundance trends. Jon noted that surprisingly few sleeper sharks were observed in the slope survey. Sharks are not sampled well by the BT surveys, therefore the biomass estimates have not been used to apply Tier 5 to sharks (Sleeper sharks are better sampled by bottom trawls.) Jon reported that future research plans include collecting more biological data for modeling these stocks. He noted that Auk Bay Lab is leading efforts on spiny dogfish, ADF&G is leading efforts on salmon sharks, and Dean Courtney (PIFSC) is completing his dissertation on Pacific sleeper sharks.

The Team accepted the authors' recommendations for Tier 6 and the basis years (1997-2007) for the calculations of OFL and ABC. The Team noted that the Council recommended separating sharks from the other species complex in a future FMP amendment for the GOA and BSAI but that Council action was 2 - 3 years in the future.

Sculpins Rebecca Reuter summarized major changes to the assessment strategy. New information, from recent research, resulted in more conservative M estimates (which ranged from 0.04-0.63), which is lower than last year's most conservative M estimates (0.19). Todd TenBrink suggested that the average M might be a little higher than the true estimate. Mike Sigler suggested that the authors include more information and a discussion on the different methods for calculating M, provided in the assessment, which could help in determining the best M to use in the calculation of ABC/OFL. The Team considered whether we still need the most conservative M when more information has been added about these species. A reasonable M for these long-lived species (age 28) is < 0.2. Mike suggested that the new values of M are analogous to a model change and requires more deliberation and recommended that the Team schedule a more thorough review in September 2009. If adopted then, the author can apply the agreed-upon values of M to calculate ABC/OFL for the review of the assessment in November 2009.

Octopus Liz Conners summarized the octopus chapter, emphasizing 2008 data. She reported better species identification was occurring by observers. The shelf survey octopus biomass was 87% *E. dofleini*. The Team concurred with last year's approach for setting OFL/ABC using a Tier 6 average. The Team also recommended that the author consider a static time interval for the catch history used to set OFL and ABC (e.g., 1990-2006), rather than updating those values every year based on a sliding 10-year window (e.g., 1998-2007). The chapter contains additional suggestions for regulating octopus harvests including a maximum size and discard mortality rates. In their September minutes, the joint Teams endorsed the use of gear-specific discard mortality rates (DMRs) in catch accounting for octopus. The Teams encouraged further development of studies and/or data collection to document octopus mortality rates. These could be included in the proposed analysis in 2009 for moving octopus either into its own specification category or into the forage fish category..

Grenadiers Jon Heifetz summarized the combined GOA, EBS, and AI grenadier assessment. New information on giant grenadiers was incorporated into the model. Grenadier catch is about on the order of sablefish catches. Highest catches occur in the GOA. Giant grenadier (97% of the grenadier catch) dominates GOA sablefish bycatch and EBS turbot longline and pot fisheries. Despite there being no deep water surveys in the AI, the highest biomass estimates were derived for this area. The BT surveys likely do not cover the full depth distribution of giant and Pacific grenadiers. The author used the relative biomass estimates (RPW) from the longline surveys of EBS and GOA and compared them to the slope bottom trawl survey estimates for EBS and GOA. For this version, he used the ratios between EBS and AI, and GOA and AI to estimate AI grenadier biomass. The maximum age of Pacific grenadier is 58. In 2006, the authors presented Tier 5 recommendations. The authors could apply Tier 4 because age-at-maturity are available for giant grenadier. The Team recommended that the assessment be prepared every two years until the analysis in support of a proposed FMP to move grenadiers into the Groundfish FMPs as a target species was considered by the Council. That amendment is a few years away from Council consideration. In September the joint Teams recommended that the Council give this proposed FMP amendment a higher priority for action. The Team had a brief discussion of the pros and cons of moving grenadier into a target category. No conservation issues for grenadiers were identified.

Atka mackerel Sandra Lowe summarized proposed changes to the model which resulted from the CIE review in 2008. An above average 2004 year class has been verified in the 2006 survey and is incorporated into the model. The Team accepted the author's recommendations for the model and OFL/ABC recommendations. The last AI BT survey occurred in 2006; the 2008 survey was canceled due to budget constraints; the next AI survey is scheduled for 2010. This is a concern for the assessment due to life history of the species. The Team is concerned that insufficient information is available to ascertain whether there is enough Atka mackerel to sustain SSL in the AI. The Team is concerned that the lack of the 2008 survey could result in an overestimate of biomass in the assessment. Fishermen eventually may the above average 2004 year class, lacking a recent fishery-independent survey, the model then would overestimate abundance and ABC values.

There were differences in how the fishery was prosecuted in 2008 under Amendment 80. While the first year of fishing under Amendment 80 has spatially dispersed the fleet, Steller Sea Lion and habitat conservation area regulations lock the fleet into the same fishing spots. For September 2009, the Team suggested that the author explore apportioning the ABC for subareas by numbers of fish (using past data) as an alternative to current weight apportionments. The Team may recommend such an apportionment in the 2009 assessment depending on those results. The Team also asked if running the model with average recruitment in the 2004 year class could be investigated. The Team requests that the author present this information at the September 2009 meeting.

Blackspotted/Rougheye Rockfishes Paul Spencer presented the assessment. Along with developing separate assessments for shortraker rockfish and rougheye rockfish this year, fish previously referred to as "rougheye rockfish" are now recognized as consisting of two species, the rougheye rockfish (*Sebastes aleutianus*) and blackspotted rockfish (*S. melanostictus*). A paper was published by Orr and Hawkins in 2007, and the authors and plan Team applied this new classification in their recommendations. Blackspotted rockfish is the predominant species in the Bering Sea and Aleutian Islands.

The Team accepted the author's recommendation for a new age-structured model for this complex, and noted that the increase in biomass is a result of using the new model. The Team also briefly discussed the availability of genetic, growth, and demographic information pertinent to whether the blackspotted and rougheye complex in the BS should be considered a distinct complex from that in the AI. The complex primarily consists of blackspotted rockfish in the AI. The Team disagreed with the authors' recommendation and does not recommend splitting rougheye complex management between the BS and AI at this time. The Team requested that a general discussion of stock structure and management implications for area management, including disproportionate harvest to area ABC be scheduled for joint Team discussion for September 2009; genetic experts will be invited. The Team accepted the author's recommendation for OFL and ABC: Tier 3b for AI, Tier 5 for EBS.

Paul Spencer also presented independent estimates of natural mortality for blackspotted/rougheye rockfish, Pacific Ocean perch, shortraker rockfish, and northern rockfish based upon: 1) Hoenig's (1983) relationship with maximum age, and 2) the quantile method, in which the mortality rate consistent with a specified quantile of the population that survives to an old age is identified. Bill Clark and Grant Thompson both commented that the quantile method is preferable when large numbers of fish have been aged in order to avoid basing the estimate on an unusually old fish not representative of the population. Spencer presented natural mortality estimates using both methods with a range of values for maximum age, including the maximum age and the ages associated with the 99th and 95th percentiles. The two methods gave very similar results. For all rockfish species, the currently used natural mortality estimates are either consistent with, or slightly more conservative than those obtained from the independent estimates.

Shortraker rockfish Paul Spencer indicated that the removal of the blackspotted/rougheye complex from the previous shortraker/rougheye complex results in a single-species surplus production model for shortraker rockfish, which is a unique modeling application in Alaska. Previously, the shortraker/rougheye rockfish complex was assessed with a two-species surplus production model that accounted for potential covariance in catch estimates. This year's assessment is a straightforward update of the 2006 model; there was no AI survey this year. The author reviewed concerns about disproportionate harvest by area; catch exceeded an ABC level for the BS in 2007 by about 100% if area apportionments were in effect. The oldest fish is 124 years. Aging efforts for this species are new, and there is insufficient age data with which to manage this species.

Pacific Ocean perch Paul Spencer presented the assessment and summarized his response to SSC comments. He asked the Team for input on approaches to modeling time-varying fishery selectivity. Mike Sigler and Dana Hanselman suggested examining modeling fishery-selectivity as constant within blocks of time that might correspond to significant changes (i.e., switch from foreign fishery to domestic fishery, changes in depth distribution, etc.). Grant Thompson suggested that it would be premature to impose a one size fits all solution to this issue and that the author should consider what is appropriate. The Team accepts the author's recommendations for the model and OFL/ABC.

Northern rockfish Paul Spencer presented the assessment and summarized his response to SSC comments. The catch is mostly bycatch in the Atka mackerel fishery. Estimation of a reasonable fishery selectivity curve remains difficult in this model, and tends to imply a very old age at 50% selection relative to the survey selectivity curve. Thus, the fishery selectivity curve was constrained to be close to the survey selectivity, and can be justified in that a different fishery selectivity would occur if a directed fishery were to develop. Discards dropped from 91% in 2002 to 79% in 2007, but are still high. The Team briefly discussed that the SAFE Report tables listing retention and discards may not conform to calculations made for the new groundfish retention standards program; a joint session in September 2009 will review the new GRS regulations and appropriate bycatch reporting in the assessments. The Team accepted the model, noting that the change in the natural mortality rate (M) caused the fishing mortality rate (F) to drop, which is the primary cause of the drop in the ABC.

Other rockfish Rebecca Reuter summarized this assessment. She identified that more effort is planned on aging of shortspine thornyhead rockfish. The Team recognized that an FMP amendment to remove dark rockfish is imminent and provided recommendations with and without that species. The Team accepted the author's recommendations to apply Tier 5.

Assessment guidance for years with canceled surveys. Paul Spencer noted that although there is guidance on whether a stock requires a "full assessment" or an "update" (re-running the projection model with updated catch data) in "off" years in which a survey is not scheduled, he is not aware of any such guidance regarding years in which a survey was scheduled to occurred but canceled, which occurred with the 2008 AI trawl survey. Although this situation essentially does not differ from an "off" year, Spencer chose to conduct full assessments in order to avoid to several consecutive years of "updates", and the Plan

Team agreed with this choice. However, under the current guidance, other authors appear to have the latitude to choose not to produce full assessments in this situation. To avoid inconsistencies in the level of information produced, Spencer asked the Plan Team to consider developing consistent guidance for years in which surveys are canceled.

Pacific halibut discard mortality rates Gregg Williams summarized the appendix to the SAFE Report, which reports on the IPHC recommendations for discard mortality rates (DMRs) to apply to the 2009 Community Development Quota (CDQ) Program. The CDQ rates are set annually due to the relative newness of the program. Next year, IPHC will provide recommendations for both the CDQ and non-CDQ fisheries for 2010-2012 fisheries, as at least ten years of data will then be available for both sectors. Henry Cheng suggested that IPHC consider using standard deviation instead of standard error. Gregg said he'd discuss it with Dr. Ray Webster, IPHC statistician. The current statistic for representing variability was recommended by the SSC. The Team accepted the IPHC staff recommendations. The Team also discussed the possible incentives for managing halibut bycatch with cooperative-specific DMRs.

Next meeting The Team identified its 2009 meeting schedule. The Team will meet separately and jointly with the GOA Groundfish Plan Team during September 14-16, 2009 and November 16-20, 2009. The Team identified two issues, along with others yet to be identified, for the BSAI Plan Team agenda in September 2009: 1) effects of BSAI Amendment 80 and Groundfish Retentions Standards on reporting bycatch/retention in the BSAI SAFE report; 2) weight based apportionments for Atka mackerel; and discuss preparation of team minutes. Items to be scheduled for a joint discussion with the GOA Plan Team are listed in the November 2008 joint Team minutes.

TABLE 7a–PROPOSED 2009 AND 2010 APPORTIONMENT OF PROHIBITED SPECIES CATCH ALLOWANCES TO NON-TRAWL GEAR, THE CDQ PROGRAM, AMENDMENT 80, AND THE BSAI TRAWL LIMITED ACCESS SECTORS

PSC species	Total non-trawl PSC	Non-trawl PSC remaining after CDQ PSQ[1]	Total trawl PSC	Trawl PSC remaining after CDQ PSQ[1]	CDQ PSQ reserve[1]	Amendment 80 sector		BSAI trawl limited access fishery
						2009	2010	
Halibut mortality (mt) BSAI	900	832	3,675	3,400 mt in 2009 and 3,282 mt in 2010	343 in 2009 and 393 in 2010	2,475	2,425	875
Herring (mt) BSAI	n/a	n/a	1,726	n/a	n/a	n/a	n/a	n/a
Red king crab (animals) Zone 1[1]	n/a	n/a	197,000	175,921	21,079	104,427	98,920	53,797
C. opilio (animals) COBLZ[2]	n/a	n/a	4,350,000	3,884,550	465,450	2,267,412	2,148,156	1,248,494
C. bairdi crab (animals) Zone 1[2]	n/a	n/a	980,000	875,140	104,860	437,658	414,641	411,228
C. bairdi crab (animals) Zone 2[2]	n/a	n/a	2,970,000	2,652,210	317,790	745,536	706,284	1,241,500

[1] Section 679.21(e)(3)(i)(A)(2) allocates 276 mt in 2009 and 326 mt in 2010 of the trawl halibut mortality limit and section 679.21(e)(4)(i)(A) allocates 7.5 percent, or 67 mt, of the non-trawl halibut mortality limit as the PSQ reserve for use by the groundfish CDQ program. The PSQ reserve for crab species is 10.7 percent of each crab PSC limit.

[2] Refer to 50 CFR § 679.2 for definitions of zones.

TABLE 7b–PROPOSED 2009 AND 2010 HERRING AND RED KING CRAB SAVINGS SUBAREA PROHIBITED SPECIES CATCH ALLOWANCES FOR ALL TRAWL SECTORS

Fishery Categories	Herring (mt) BSAI	Red king crab (animals) Zone 1
Yellowfin sole	148	n/a
Rock sole/flathead sole/other flatfish[1]	26	n/a
Turbot/arrowtooth/sablefish[2]	12	n/a
Rockfish	9	n/a
Pacific cod	26	n/a
Midwater trawl pollock	1,318	n/a
Pollock/Atka mackerel/other species[3]	187	n/a
Red king crab savings subarea	n/a	n/a
Non-pelagic trawl gear[4]	n/a	49,250
Total trawl PSC	1,726	197,000

[1] "Other flatfish" for PSC monitoring includes all flatfish species, except for halibut (a prohibited species), flathead sole, Greenland turbot, rock sole, yellowfin sole, and arrowtooth flounder.

[2] Greenland turbot, arrowtooth flounder, and sablefish fishery category.

[3] Non-pollock, Atka mackerel, and "other species" fishery category.

[4] In October 2008 the Council recommended that the red king crab bycatch limit for non-pelagic trawl fisheries within the RKCSS be limited to 25 percent of the red king crab PSC allowance (see § 679.21(e)(3)(ii)(B)(2)).

TABLE 7c–PROPOSED 2009 AND 2010 PROHIBITED SPECIES BYCATCH ALLOWANCES FOR THE BSAI TRAWL LIMITED ACCESS SECTOR AND NON-TRAWL FISHERIES

BSAI trawl limited access fisheries	Prohibited species and area[1]				
	Halibut mortality (mt) BSAI	Red king crab (animals) Zone 1	C. opilio (animals) COBLZ	C. bairdi (animals) Zone 1	C. bairdi (animals) Zone 2
Yellowfin sole	162	47,397	1,176,494	346,228	1,185,500
Rock sole/flathead sole/other flatfish[2]	0	0	0	0	0
Turbot/arrowtooth/sablefish[3]	0	0	0	0	0
Rockfish	3	0	2,000	0	1,000
Pacific cod	585	6,000	50,000	60,000	50,000
Pollock/Atka mackerel/other species	125	400	20,000	5,000	5,000
Total BSAI trawl limited access PSC	875	53,797	1,248,494	411,228	1,241,500
Non-trawl fisheries	Catcher processor	Catcher vessel			
Pacific cod-Total	760	15			
January 1-June 10	314	10			
June 10-August 15	0	3			
August 15-December 31	446	2			
Other non-trawl-Total		58			
May 1-December 31		58			
Groundfish pot and jig		exempt			
Sablefish hook-and-line		exempt			
Total non trawl PSC		833			

[1] Refer to § 679.2 for definitions of areas.

[2] "Other flatfish" for PSC monitoring includes all flatfish species, except for halibut (a prohibited species), flathead sole, Greenland turbot, rock sole, yellowfin sole, and arrowtooth flounder.

[3] Greenland turbot, arrowtooth flounder, and sablefish fishery category.

TABLE 7d–PROPOSED 2009 PROHIBITED SPECIES BYCATCH ALLOWANCE FOR THE BSAI AMENDMENT 80 COOPERATIVES

Year	Prohibited species and zones[1]				
	Halibut mortality (mt) BSAI	Red king crab (animals) Zone 1	C. opilio (animals) COBLZ	C. bairdi (animals)	
				Zone 1	Zone 2
2009	1,793	74,345	1,544,825	321,922	548,443

[1] Refer to § 679.2 for definitions of zones.

TABLE 7e–PROPOSED 2009 PROHIBITED SPECIES BYCATCH ALLOWANCES FOR THE BSAI AMENDMENT 80 LIMITED ACCESS FISHERIES

Amendment 80 trawl limited access fisheries	Prohibited species and zone[1]				
	Halibut mortality (mt) BSAI	Red king crab (animals) Zone 1	C. opilio (animals) COBLZ	C. bairdi (animals)	
				Zone 1	Zone 2
Yellowfin sole	359	5,867	632,306	60,832	149,709
Jan 20 - Jul 1	212	5,674	622,726	56,349	120,793
Jul 1 - Dec 31	148	193	9,580	4,483	28,916
Rock sole/other flat/flathead sole[2]	222	24,039	89,476	54,593	46,523
Jan 20 - Apr 1	178	23,687	86,449	48,162	40,637
Apr 1 - Jul 1	20	176	1,590	3,371	2,943
July 1 - Dec 31	24	176	1,437	3,060	2,943
Turbot/arrowtooth/ sablefish[3]	n/a	n/a	n/a	n/a	n/a
Rockfish	50	n/a	n/a	n/a	n/a
Pacific cod	1	176	805	311	861
Pollock/Atka mackerel/other[4]	50	0	0	0	0
Total Amendment 80 trawl limited access PSC	682	30,082	722,587	115,736	197,093

[1] Refer to § 679.2 for definitions of zones.

[2] "Other flatfish" for PSC monitoring includes all flatfish species, except for halibut (a prohibited species), flathead sole, Greenland turbot, rock sole, yellowfin sole, and arrowtooth flounder.

[3] Greenland turbot, arrowtooth flounder, and sablefish fishery category.

[4] Pollock other than pelagic trawl pollock, Atka mackerel, and "other species" fishery category.

NOV-21-2008 10:30A FROM: TO:19072712817

AGENDA C-3(a)
Supplemental
DECEMBER 2008

F/V SEADAWN FISHERIES, INC.
P. O. Box 352
Newport, Oregon 97365
(541) 867 3911 Phone
(541) 867-3913 Fax

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N.P.F.M.C.

November 21, 2008

Eric A. Olson, Chairman
North Pacific Fishery Management Council
605 W. 4th Avenue, Suite 306
Anchorage, AK 99501-2252

VIA FAX: (907) 271-2817

RE: Agenda Item C-3(b) - Groundfish Catch Specifications/BSAI Pollock

Dear Chairman Olson and Council Members:

I am the managing owner of the F/V SEADAWN which is a family owned and operated, independent, 124 foot AFA pollock catcher vessel which has been engaged in the pollock fishery now for more than 20 years. I have two captains (one of which is my son) and a regular crew of 5, most of whom have been involved in the pollock fishery for almost 20 years themselves.

The purpose of this letter is to confirm from a catcher boat's point of view the accuracy of the surveys reported to this Council by NMFS reflecting a substantial decline of the pollock biomass in recent years. My captain's and crew report a steady decline in the fish available for harvest during this past several years. My vessel, although it delivers shoreside, has been traveling up to 500 miles north during B Season searching for pollock which it must deliver back to the shore plants and even then the catch rates were often poor. Traditionally, boats such as mine seldom traveled more than 200 miles to find adequate supplies of pollock.

We believe that with the pollock biomass in a condition of low abundance that now is the time to be extremely conservative. Even though the forecast is for new age classes to support the fishery in future years, we must be conservative at this time as it relates to harvesting the remaining spawning biomass in 2009 so that these older fish will have an opportunity to sufficiently spawn and provide the opportunity for future stocks. There is no certainty that the new age classes currently forecasted to be strong in future years will in fact materialize so until it does we need to protect the future of the pollock fishery by being conservative.

Everyone on our vessel including captains, crew and owners have been and continue to be in this fishery for the long term and therefore support conservative management of the pollock fishery in this time of lower pollock biomass. In that regard, we support the NOAA recommended ABC of 815,000 metric tons for 2009.

We believe that bearing the pain of this reduction at this point is much preferable than the risk of overfishing our nation's most important fishery.

Sincerely,

Fred A. Yeck

December 2, 2008

RECEIVED
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N.P.F.M.C.

Mr. Eric Olson, Chair
Council Members
North Pacific Fishery Management Council
605 West 4th Avenue, Suite 306
Anchorage, Alaska 99501-2252

RE: **Groundfish Specifications for Eastern Bering Sea Pollock**

Dear Chairman Olson and Council Members:

New measures are needed to reverse the decline of the eastern Bering Sea pollock stock, which has declined an average of twenty percent per year since 2003. With the exception of the 2006 year class, recruitment has been poor in recent years as well. This year's hydroacoustic survey results showed a 50% drop since last year, and the bottom trawl survey was the second worst on record. The stock abundance is below the B_{MSY} and $B_{40\%}$ biomass targets.

This is of concern not only for pollock stocks and for the pollock fishery, but also for the broader ecosystem, due to pollock's role as a staple food source for many species of marine mammals, sea birds, and other fish species of economic importance to the region's fishermen. Pollock as a forage fish off western Alaska has been likened to the role of krill in the Southern Ocean. Its critical importance to the Bering Sea food web means that this decline has had severe implications for Alaska's native villages and fishing communities.

Some have speculated that the decline in Pollock numbers is attributable to global warming, claiming that pollock are migrating farther north into Russian waters. However summer foraging migrations into the northwestern Bering Sea and the Navarin Basin have been observed for as long as pollock fishing has occurred, and the summer resource surveys do not support the idea that pollock are simply shifting their distribution north. In fact, the eastern Bering Sea has experienced colder than average temperatures in recent years. A more likely scenario is that decades of heavy fishing pressure have resulted in localized depletion in the southeastern Bering Sea. US fishermen are traveling farther west, and Russian fishermen are traveling east, often fishing in sight of each other on either side of the national boundary.

Bycatch concerns have increased as a result of the decline in pollock biomass. As catch per unit effort has decreased, longer tows have been employed. Straining more water to catch fewer fish has led to severe bycatch of Chinook and chum salmon and halibut, among other species. There has been considerable faith placed in the 2006 year class, which we all hope will survive to maturity in sufficiently large numbers that it can begin to reverse the decline. In order for that to be possible, a much more precautionary Total Allowable Catch (TAC) for 2009 will be necessary, to minimize bycatch of 2006 year class juveniles.

A more precautionary approach is further warranted given the uncertainty associated with climate change, which has often been acknowledged as capable of influencing pollock but has yet to be incorporated on the management end. Substantially reducing the TAC will also help address bycatch problems and reduce impacts on foraging efficiency of endangered Steller sea lions and depleted northern fur seals.

Additionally, the roe fishery should be suspended or severely reduced. Targeting spawning aggregations is rarely sustainable in the best of times, and extremely risky in periods of low spawning stock biomass and poor recruitment. Many of these prime spawning grounds are located in Steller sea lion critical foraging habitat, and their protection during the critical winter spawning period would provide protection for the pollock as well as an endangered pollock predator.

In the longer term, we urge that you establish no take marine reserves to provide refuges for larger, more reproductively valuable fish, and to serve as control areas that can help us understand the effects of climate change on pollock stocks. Marine reserves will also provide the experimental controls called for in the Steller Sea Lion Recovery Plan.

It should be noted that the current management approach has not been sufficient to ensure the sustainability of pollock fisheries. Of the four managed stocks, two (Bogoslof and Aleutian Islands) are now closed to fishing, and the Gulf of Alaska stock is at record low levels. The eastern Bering Sea stock is the only one still capable of supporting a major commercial fishery, and indications are that action is urgently needed to ensure that it does not collapse.

To summarize, we urge three crucial actions for Bering Sea pollock management, as follows: (1) substantial reductions in the Total Allowable Catch; (2) suspension of the roe fishery; and (3) establishment of marine reserves. These measures will help reverse the decline of Bering Sea pollock stocks, reduce bycatch, and reduce impacts on marine mammals.

Sincerely yours,

This letter is signed by the following twenty-four conservation organizations and stakeholder groups and sixty-three marine scientists and professionals:

Groups:

Alaska Cottages

Alaska Wildlife Alliance

Anchorage Audubon Society

Blue Frontier Campaign

Captain Pete's Alaska

Conservation Science Institute

Cook Inletkeeper

EarthEcho International

Enchanted Earth Ocean Foundation

Environment America

Greenpeace USA

Hoover Environmental Group

Juneau Audubon Society

Ocean Conservation Research

Ocean Conservation Society

Ocean Revolution

Oceanus Alaska

Save Our Seas

Save the Blue

Sitka Conservation Society

The Interfaith Council for the Protection of Animals and Nature

The Ocean Foundation

Whale's Eye Lodge & Charter

Wild Alaska Cruises

Scientists:

Stephen Arnott, Ph.D., Marine evolutionary ecologist, Stanford University

Murat Aydin, Ph.D., Assistant Researcher, Department of Earth System Science, University of California, Irvine

Andrew Baker, Ph.D., Rosenstiel School of Marine and Atmospheric Sciences, University of Miami, Pew Fellow in Marine Conservation

Anne Wakeford Berry, M.S., M.A., Independent consultant

Rudiger Bieler, Ph.D., Field Museum of Natural History & University of Chicago

Peter Castro, Ph.D., California State Polytechnic University

Meggen Chadsey, Ph.D., University of Washington

John A. Cigliano, Ph.D., Associate Professor and Chair, Department of Biological Sciences, Cedar Crest College

Louis A. Codispoti, Ph.D., University of Maryland Center for Environmental Science

Gershon Cohen, Ph.D., Project Director, Campaign to Safeguard America's Waters, Earth Island Institute

Theo Colborn, Ph.D., TEDX (The Endocrine Disruption Exchange), Paonia

Leslie Cornick, Ph.D., Associate Professor, Marine Biology, Alaska Pacific University

Dorinda G. Dallmeyer, J.D., University of Georgia

Phaedra Doukakis, Ph.D., Pew Institute for Ocean Science, University of Miami

Suzanne Edmands, Ph.D., Associate Professor, Marine Environmental Biology, University of Southern California

Thomas L. Fleischner, Ph.D., Professor of Environmental Studies, Prescott College

Roger Grace, Ph.D., Marine Biologist, Independent consultant, New Zealand

Mansi Grover, Ph.D., Virginia Tech

Gary D. Grossman, Ph.D., Distinguished Research Professor, Warnell School of Forestry & Natural Resources, University of Georgia

Richard L. Haedrich, Ph.D., Professor Emeritus, Department of Biology, Memorial University, Newfoundland, Canada

Kristine B. Hartney, Ph.D., California State Polytechnic University

David Hastings, Ph.D., Galbraith Marine Science Laboratory, Eckerd College

Gene Helfman, Ph.D., Professor Emeritus, Odum School of Ecology, University of Georgia

Julie V. Hopper, B.S., Ph.D. candidate, University of California, Berkeley

Mark Hudson, Ph.D., University of West Kyushu, Japan

Patrick L. Hulett, M.S., Fish Research Biologist, Washington Department of Fish and Wildlife

Malcolm Hunter, Ph.D., University of Maine

David Inouye, Ph.D., University of Maryland

Jeremy Jackson, Ph.D., Ritter Professor of Oceanography, Scripps Institution of Oceanography, Fellow of the American Academy of Arts and Sciences and the American Association for the Advancement of Science

Jennifer Jacquet, Ph.D. candidate, University of British Columbia

Kiho Kim, Ph.D., Chair, Department of Environmental Science, American University

Marguerite Koch, Ph.D., Department of Biological Sciences, Florida Atlantic University

William F. Loftus, Ph.D., United States Geological Survey-Florida Integrated Science Center, Everglades National Park Field Station

Michael Lutz, Ph.D., Rosenstiel School of Marine and Atmospheric Sciences, University of Miami

David K. Mellinger, Ph.D., Associate Professor (Senior Research), Cooperative Institute for Marine Resources Studies, Oregon State University

Kathy Ann Miller, Ph.D., University of California, Berkeley

Sarah Milton, Ph.D., Department of Biological Sciences, Florida Atlantic University

Robert Miller, Ph.D., University of California, Santa Barbara

Steven G. Morgan, Ph.D., University of California, Davis

Guy W. Oliver, Ph.D., Research Fellow, Institute of Marine Sciences, Long Marine Lab, University of California, Santa Cruz

Linwood Pendleton, Ph.D., Senior Fellow and Director of Economic Research, The Ocean Foundation

Anthony Picciolo, Ph.D., Picciolo Ocean Consultants

Ariel Poholek, Biological Scientist, FL Fish & Wildlife Conservation Commission

Michelle Portman, Ph.D., Postdoctoral Research Fellow, Marine Policy Center, Woods Hole Oceanographic Institution

Nejem Raheem, Ph.D., Senior Lecturer, Kinship Conservation Fellows, Senior Economist, Center for Sustainable Economy, University of New Mexico

Michael Redding, Ph.D., Dept. Biology, Tennessee Tech University

Alex David Rogers, Ph.D., Senior Research Fellow, Institute of Zoology, Zoological Society of London, United Kingdom

Mike Salmon, Ph.D., Research Professor, Florida Atlantic University

Dianne Sitkins, B.S., Environmental Analyst, South Florida Water Management District

Norm Sloan, Ph.D., Gwaii Haanas National Park Reserve, Canada

Gerald Smith, Fish Biologist, Ph.D., University of Michigan

Michael Soulé, Ph.D. Stanford University, Professor Emeritus, University of California, Santa Cruz, Founder of the Society for Conservation Biology and Wildlands Project

Alan Springer, Ph.D., University of Alaska Fairbanks, Institute of Marine Science

John Starmer, M.Sc., Pacific Marine Resources Institute, Inc.

Lei Lani Stelle, Ph.D., Assistant Professor of Biology, University of Redlands

Alina M. Szmant, Ph.D., UNCW-Center for Marine Science

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Zafer Top, Ph.D., Research Professor, Rosenstiel School of Marine and Atmospheric Sciences, University of Miami

Richard R. Vance, Ph.D., Professor Emeritus, University of California

Stephanie Wear, M.S., The Nature Conservancy & University of Florida

Judith S. Weis, Ph.D., Professor, Rutgers University

Michael R. Williams, Ph.D., University of Maryland Center for Environmental Science

Freezer Longline Coalition
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2303 West Commodore Way, Suite 202, Seattle, WA 98199

Scientific and Statistical Committee (NPFMC) Meeting
December 8-10th, 2008
Agenda item:
C-3 (b)

Approve Final BSAI groundfish specifications and SAFE Reports.

Source: Mark Maunder, Quantitative Resource Assessment LLC, Freezer Longline Coalition.
Date of information: December 3rd, 2008

Scientific and Statistical Committee:

Chair Livingston,

SSC members, thank you very much for your time and for your consideration of the various issues surrounding the BSAI and GOA Pacific cod assessment and final specifications as well as all of the items on the SSC agenda.

My Name is Kenny Down and I represent the Freezer Longline Coalition (FLC). The FLC represents thirty-four of the thirty-six hook-and-line catcher processors operating in the Bering Sea and Aleutian Islands area with LLP's and cod endorsements for the Federal fishery. This is a Washington and Alaska based and owned fleet. Twenty-eight of our vessels also have groundfish endorsements for Western GOA, Central GOA or both and participate in operations in those areas as well.

Attached please find Dr. Mark Maunders report on the November 2008 Plan Team Meeting. This report details several items of interest in this year's BSAI and GOA P. cod assessment as well as addresses several ongoing areas of interest. Both Dr. Maunder and I are planning to attend the SSC meeting on this agenda item and will have public testimony on this item and be available for questions. We hope these documents and our public testimony will be helpful in making the decisions before your committee at this December meeting.

Kenny Down
Executive Director
Freezer Longline Coalition

Freezer Longline Coalition

2303 West Commodore Way, Suite 202
Seattle, WA 98199
Office Phone 206-284-2522
Cellular Phone 206-972-4185
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$p(\theta|y)=$ Quantitative Resource Assessment LLC

Quantitative Resource Assessment LLC
San Diego, CA
USA.

Report on the November 2008 Plan Team Meeting

Summary
This report focuses on issues relative to the choice of the assessment model by the Plan Team for assessing Pacific cod in the Bering Sea. The discussion is based on reading the Bering Sea stock assessment report, attending the November Groundfish Plan Team meeting, looking at data, and conducting several stock assessment model runs and auxiliary analyses. Much technical detail is provided in the report so that it will be useful to the Assessment Team, Plan Team, and SSC.

The main findings of the report are:

1) The criteria used to choose the preferred assessment model eliminated at least one reasonable model (D2) and probably a second (F2).
2) Conservatism due to the observation of a continued decline in the survey biomass is not based on careful consideration of the evidence and is using the decline twice to reduce the ABC.
3) Statistical tests suggest that the influence of model C1 on management recommendations should be down weighted compare to model B1.
4) The ABC is hyper sensitive to the value of natural mortality
5) The inconsistency between the aging data and the modes in the survey length frequency data has not been addressed. However, the answer could be as simple as bias in the method used to calculate mean length.
6) Choice of selectivity curves has a large influence on the results.
7) The results of the GOA stock assessment are les reliable than the Bering Sea stock assessment.
8) The ability of the Public to contribute to the assessment process has greatly increased, but is still problematic when it comes to requesting alternative models that are acceptable to the SSC and Plan Team.
9) Several areas of research can still be carried out to improve the stock assessment. For example, age and sex specific natural mortality, and sex specific growth might be important processes that need to be included in future assessment models.

Criteria
The assessment team used four evaluation criteria to choose the preferred model.
1) *The model should estimate mean lengths for ages 1-3 that are close to the first three modes from the long-term average trawl survey size composition.*

All models passed this criteria. It should be noted that this criteria emphasizes the length frequency data and that fitting the modes in the length-frequency data is more important than fitting the age data. All models provide a poor fit to the age data and the estimated growth curves differ from the growth curve estimated using the age data. This criteria is therefore inconsistent with the Plan Team and SSC recommendation that the age data should be used in the assessment model, which was used to reject model D2. The method used to estimate natural mortality used in model D2 is more consistent with this criteria than model B1.

2) *The model should assume or estimate a reasonable value for M.*
Models E2 and F2 were eliminated because their estimates of natural mortality were too high. The range of natural mortality considered reasonable were those calculated using Jensen's life history formula and the 95% confidence interval for the age at 50% maturity. This range ignores the possibility of aging bias, which would produce higher estimates of natural mortality, that Jensen's rule is not strictly true for all populations, and that other estimates of natural mortality have been higher (including recent estimates of natural mortality from tagging data: 0.4 and 0.5). Therefore, model F2 with an estimate of 0.47 for natural mortality is not out of the range of possible values.

3) *The model should estimate a reasonable average for the product of trawl survey catchability and trawl survey selectivity for the 60-81 cm size range.*
Models A2 and E2 were eliminated under this criteria. The value of catchability estimated from archival tagging data is probably more uncertain than used in this criterion. This is because the sample size is small and that the tagging data were only collected in a single year. Therefore, model A2 with an estimate of 0.27 for catchability is probably not out of the range of possible values. However, the very small value estimated by model E2 is unrealistic.

4) *For models that satisfy the first three criteria above, the following "tie-breaker" criterion will be used: Choose the model that implies the least drastic changes with respect to recent understanding regarding appropriate model structure and the size and productivity of the stock (in other words, do not make big changes in the model unless there is a compelling reason to do so).*
Under this criteria, only model B1 is accepted because the change in the 2009 ABC is within 10% of the 2009 ABC set last year. This is generally not a scientific rationale for selecting a model. If it is a scientific rational in terms of stock assessment modeling, it must be based on the previous model being a reasonable model. However, the 2009 ABC set last year was a rollover from the previous year due to an inconsistency used in calculating the ABC last year. In addition, setting ABCs for Pacific cod two years in advance is very imprecise due to the large variability in recruitment and population size. I guess that the rational is related to not wanting wild changes in ABC from year to year and for the reason that if the population has not yet collapsed, the current ABC must be somewhat reasonable (e.g. not too high) while it is not know if a different ABC (e.g. higher) is reasonable.

The Assessment Team also adds the criteria that *the age data should be included* as requested by the Plan Team and SSC. However, as mentioned above, this criterion is not consistent with criteria 1. It is also inconsistent with the substantial down weighting of the aging data in the GOA assessment.

Declining survey abundance

A precautionary approach has been advocated by the Plan Team and the SSC due to the continued decline in the survey biomass estimates (Fugure 1). This decline is occurring despite a large 2006 cohort. The survey estimate of numbers shows a different picture with a substantial increase in 2007 when this cohort was one year old, and then a decrease in 2008. A difference between the survey estimates of biomass and recruitment can be expected due to higher mortality and low weight of young fish. To evaluate the appropriate need for caution due to the continued decline in the survey biomass estimate, the behavior of the survey estimates can be evaluated after other large recruitments. Figure 2 highlights the biomass estimates two years after a large recruitment. In some years the survey estimates of biomass increased after a large recruitment, in other years it decreased. When the large recruitment was preceded by three or more low levels of recruitment (cohorts spawned in 1982,1989, 1996, and 2006) the survey estimated biomass decreased two years after the recruitment year. The same comparisons can be made with the survey estimated numbers (Figure 3). In this case the numbers one year after the 2006 recruitment were substantially higher, which has not been seen after any other large recruitment event. The large increases have generally occurred two years after a large recruitment event that was preceded by other large recruitments (cohorts spawned in 1992 and 1999). Some of these differences may be due to density dependent growth and it's influence on selectivity and/or natural mortality. However, average length at age 1 has been decreasing, while selectivity has been increasing (Figure 4). (The average length data may need to be reinterpreted due to possible bias due to aging error and/or length based sampling). It should be noted that one reason for allowing the trawl survey selectivity to vary over time for the one year olds is to adjust for annual variability in natural mortality for the one year olds.

Choosing a lower ABC because the 2008 survey abundance is declining is double penalizing the ABC. The assessment is already penalized for the declining survey index by including the survey index in the assessment. For example, if model B1 is rerun while eliminating the survey index data point for 2008, the spawning biomass in recent years would be higher in 2008 (Figure 5).

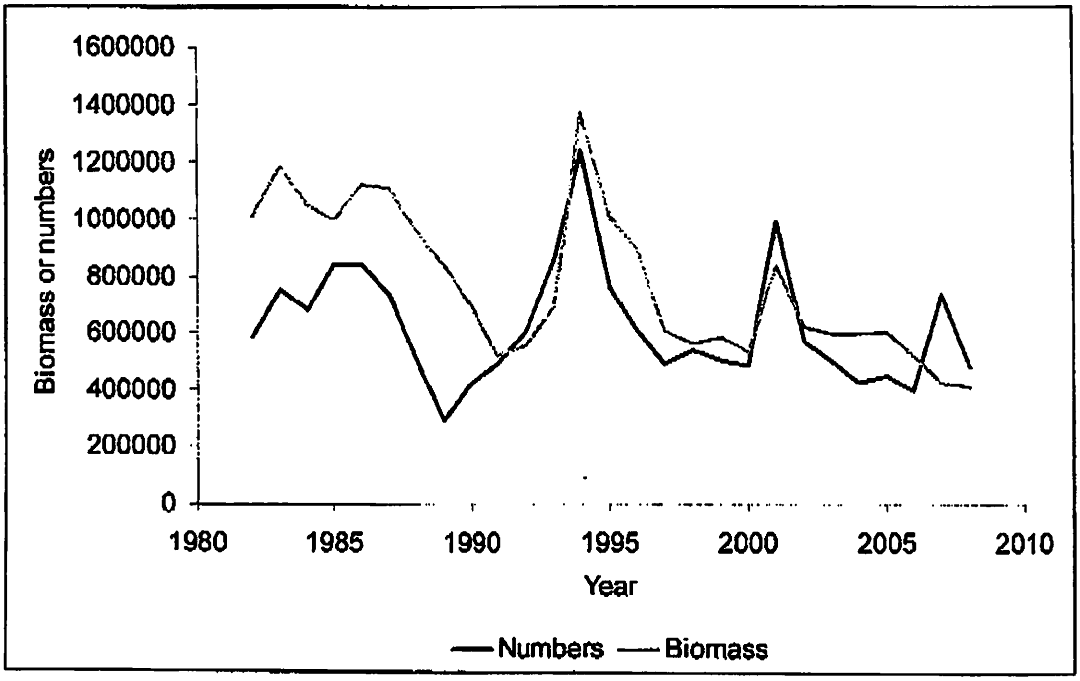

Figure 1. Time series of biomass and numbers estimated by the survey.

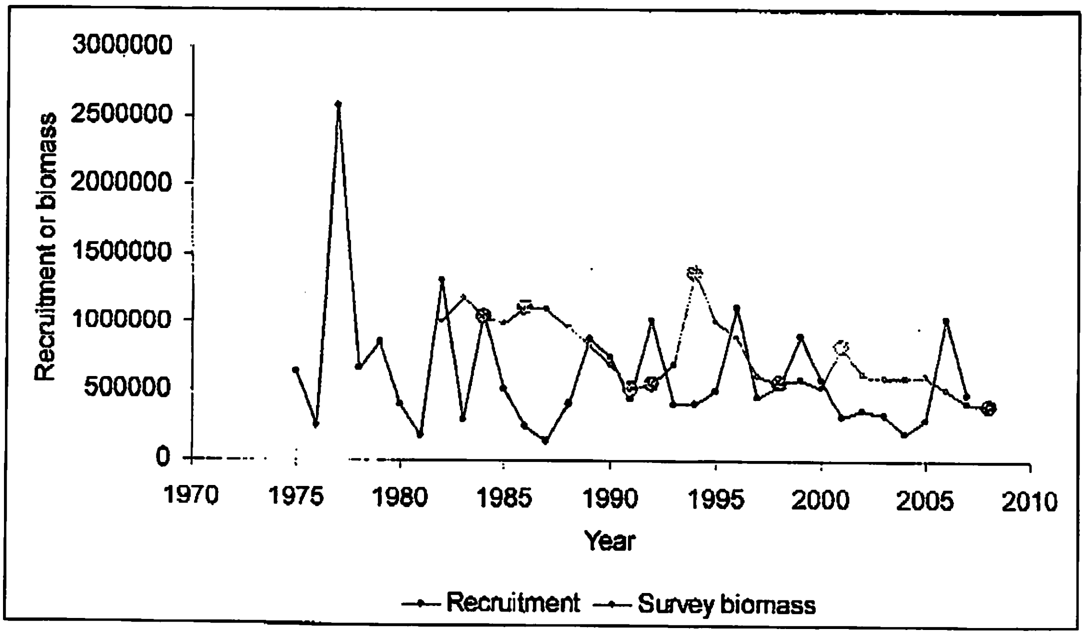

Figure 2. Time series of recruitment estimated by model B1 and the survey biomass. The large round circles represent the survey biomass two years after an estimated large recruitment.

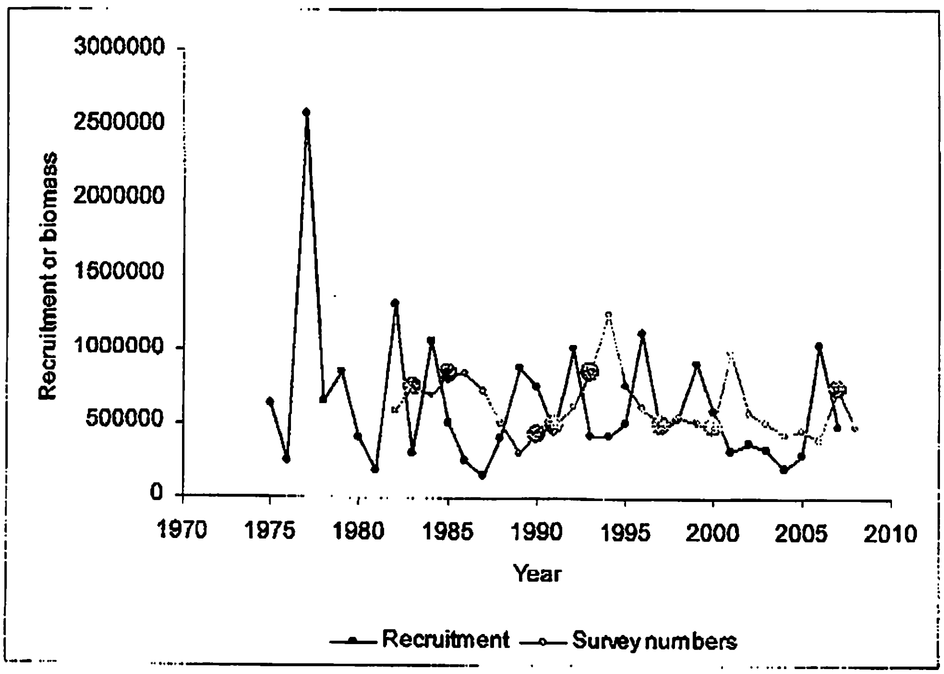

Figure 3. Time series of recruitment estimated by model B1 and the survey numbers. The large round circles represent the survey biomass one year after an estimated large recruitment.

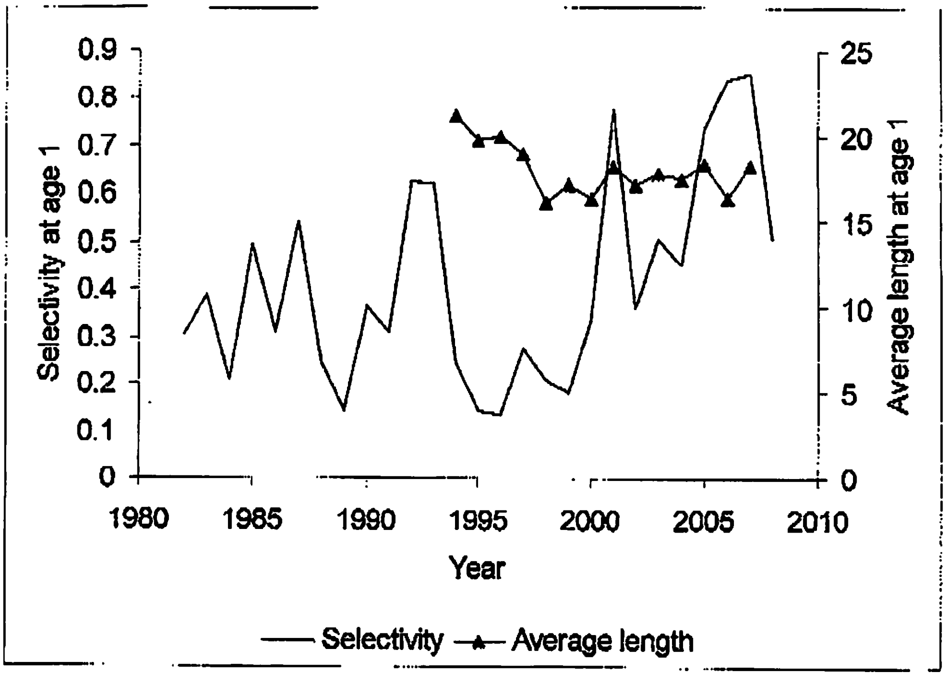

Figure 4. Time series of estimated selectivity at age one from assessment model B1 and the mean length at age one.

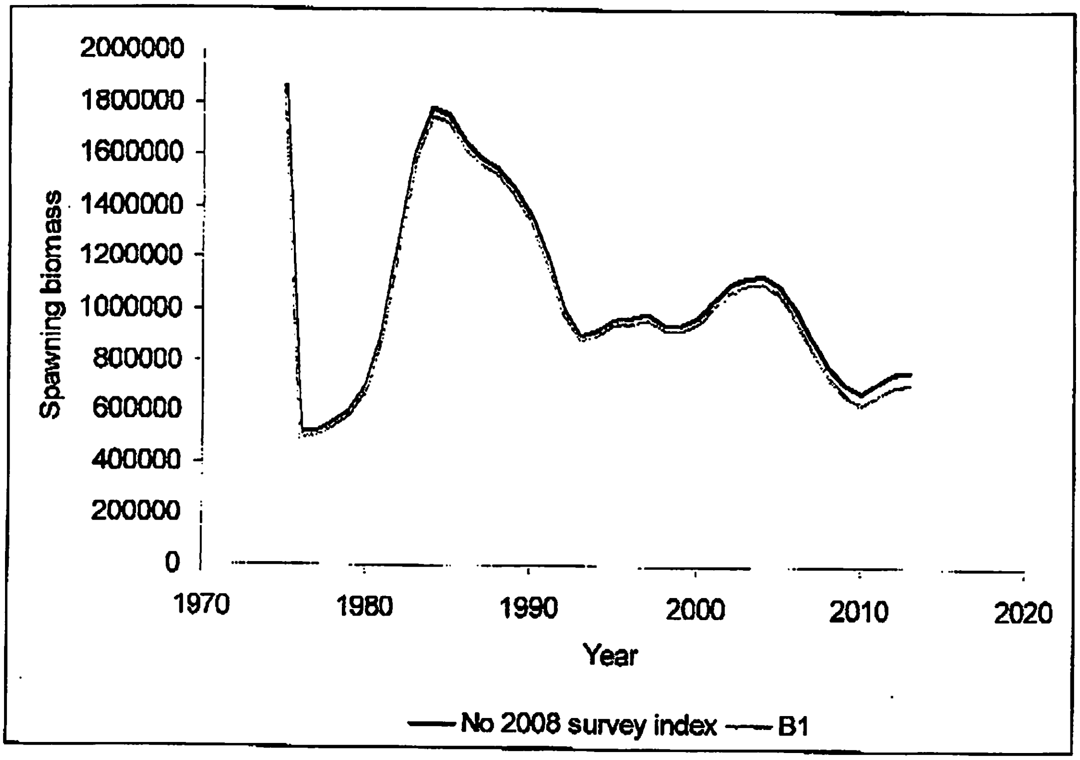

Figure 5. Estimated spawning biomass with and without the 2008 survey index of abundance.

Model C1 was not a significant improvement over B1

Model C1 is the same as model B1 except that natural mortality was estimated. The estimate of natural mortality (0.33) was similar to that assumed in B1 (0.34). However, the slightly smaller value for natural mortality caused a much larger reduction in ABC. This hyper-sensitivity is partly because the reduced M causes a combination of lower relative biomass (B/B0), which causes the fishing mortality in the harvest rule to be reduced, and lower estimates of reference fishing mortality rates.

Model C1 was not a statistically significant improvement over model B1. The Likelihoods were almost identical and model C1 has one additional parameter estimated. Under the concept of parsimony (selecting the simplest model that fits the data well) and the null hypothesis that natural mortality equals 0.34, statistical tests would select model B1 over model C1. One of the Plan Team Members use AIC weighting of the ABCs from models B1 and C1 (which gives less weight to model C1) and got an ABC of 175,000, which is close to the value advocated by the Assessment Team..

Inconsistency between the mean length-at-age from the aging data and the modes in the survey length-frequency data

There is still an inconsistency between the mean length-at-age from the aging data and the modes in the survey length-frequency data. The inconsistency indicates that there may be a bias in the aging data. The SSC and Plan Team still stress that any model used for assessing Pacific cod must contain the aging data. Given the possible bias in the aging data indicated by the inconsistency with the modes of the survey length-frequency data and the inability of the model to fit the age data, it does not seem appropriate to require the age data to be used. At a minimum, the model should be presented with and without the age data for any candidate models put forward by the Assessment Team.

The inconsistency issue was raised several years ago, but has yet to be addressed to the extent that the inconsistency has been resolved. This should be a priority for the Assessment Team. The issue was discussed at the Plan Team Meeting and it was agreed to include a note in the minutes that research should be done to resolve this issue. The research should include both work within the assessment framework and by the aging lab. The issue is relevant to both the Bering Sea and Gulf of Alaska assessments.

The inconsistency could simply be that the mean length is calculated from the age-length key, which is sampled by choosing fish in length categories. This may bias the estimate of mean length at age. The mean length should be calculated by first putting the length-frequency data through the age-length key, then calculating the mean length. This was done for the 2002 data and the mean length moved in the right direction (Figure 6).

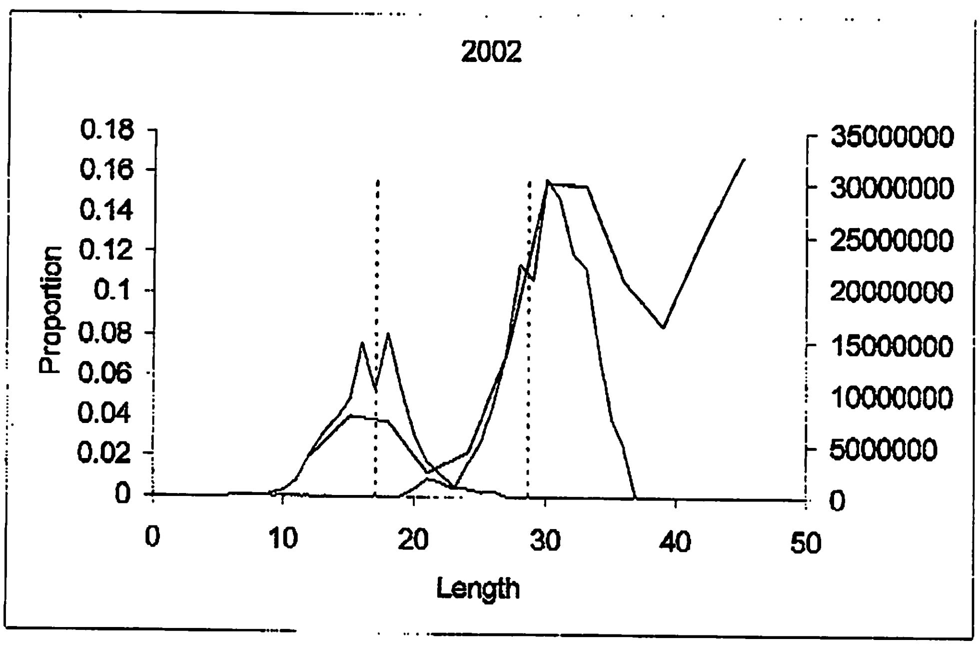

Figure 6. Survey length frequency distribution for small fish and the length distributions for ages one and two after passing the length distribution through the age-length key. The vertical dashed lines are the mean length at ages one and two from the age-length key.

Selectivity
The model results were highly sensitive to the assumptions about selectivity. The model suggested by the SSC (A1) had much higher ABC than the model supported by the Assessment Team (B1). The difference between these models is that model B1 has more fisheries with asymptotic selectivity. Determining which fisheries catch the largest fish is difficult because of variation in the proportion of fish caught at age and because the age/length at peak selectivity differs among fisheries. The assessment author used a complex algorithm to determine which selectivities were asymptotic. This approach was reasonable, but still involved somewhat arbitrary decisions about which fisheries should be asymptotic.

Tagging data indicates that length-specific recovery rates are dome shape for all fisheries. This implies that either selectivity is dome shape for all fisheries or that natural mortality increases with age. The decline of the right hand limb appears to occur about the age at maturity.

The Assessment team also separated the selectivity into time blocks. They used a statistical test (AIC) to determine if the selectivites should be broken into time blocks and the length of the time blocks (5, 10, or 20 years). They use this method as a compromise between having time varying selectivity and reducing the number of parameters, which have both been requested by either the Plan Team or SSC. This approach does not allow for precise temporal positioning of changes in selectivity. Two alternatives are 1) to have time blocks in selectivity (and test them) based on known changes in the gear, fishing areas, or other important characteristic, and 2) use an annual deviate for the selectivity parameters. The latter approach has the issue of determining the appropriate value of the variance for the distribution of the annual deviates, but can also be used to identify when time blocks should occur to use in the former approach.

Model Tests using AIC
The selection of model assumptions using the AIC statistical test relies on the appropriate specification of the samples sizes (for age and length frequency data) and the standard deviations (for index data) used in the likelihood functions. The results indicate that the sample sizes for the length data are too small and this may have impacted the statistical tests. However, it should also be noted that the effective sample sizes also incorporate process error so that as more selectivity parameters are estimated, the effective sample size should be higher.

Age and sex-specific natural mortality
Tagging data indicates that length-specific recovery rates are dome shape for all fisheries. This implies that either selectivity is dome shape for all fisheries or that natural mortality increases with age. This is consistent across gears and tagging programs (Figures 7 and 8). The decline of the right hand limb appears to occur about the age/size at maturity. Modifying model B1 to estimate a value for natural mortality before and after the age at 50% maturity, produces a model that is significantly (in terms of its statistical fit to the

females can produce dome shape selectivity and/or recovery rates.

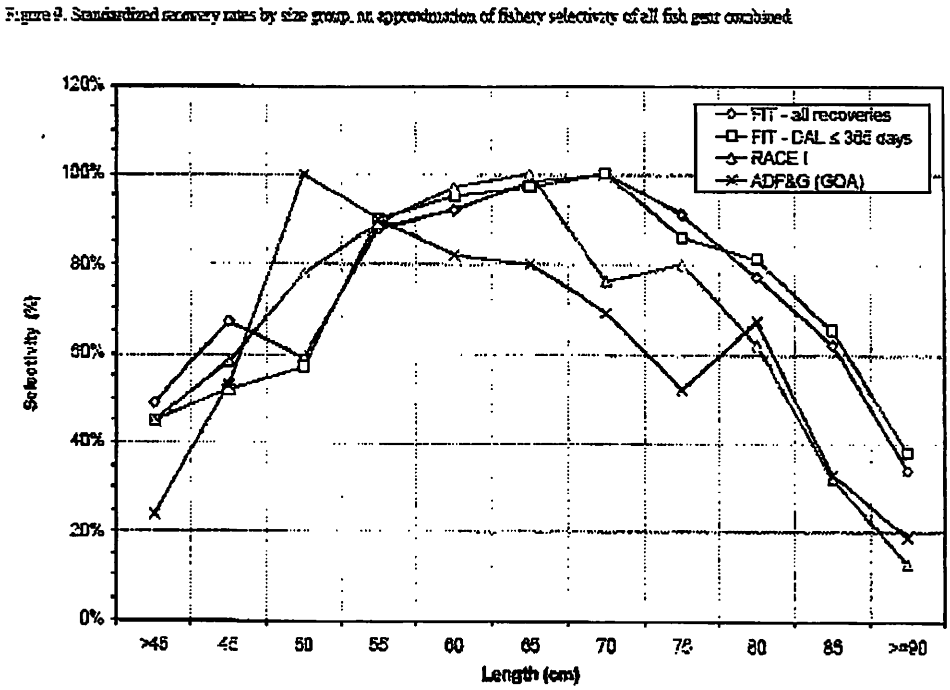

Figure 7. From Shi et al 2007. Standardized recovery rates for all gears combined from different tagging programs.

Figure 12. Standardized recovery rates by size group and by recovery fishing gear type with all recoveries from FIT data. An approximation of gear selectivity.

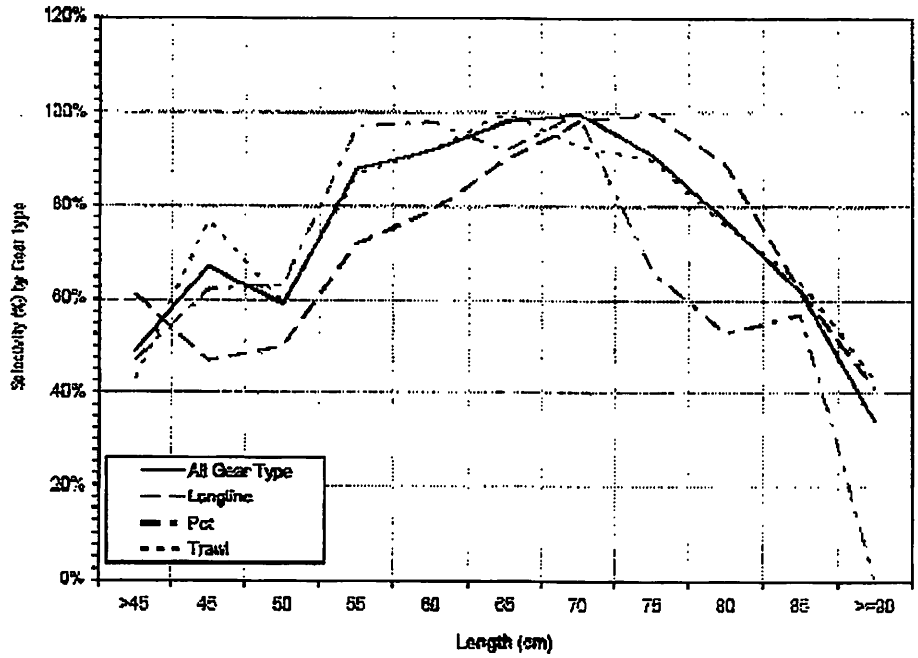

Figure 8. From Shi et al 2007. Standardized recovery rates by gear from the FIT tagging program.

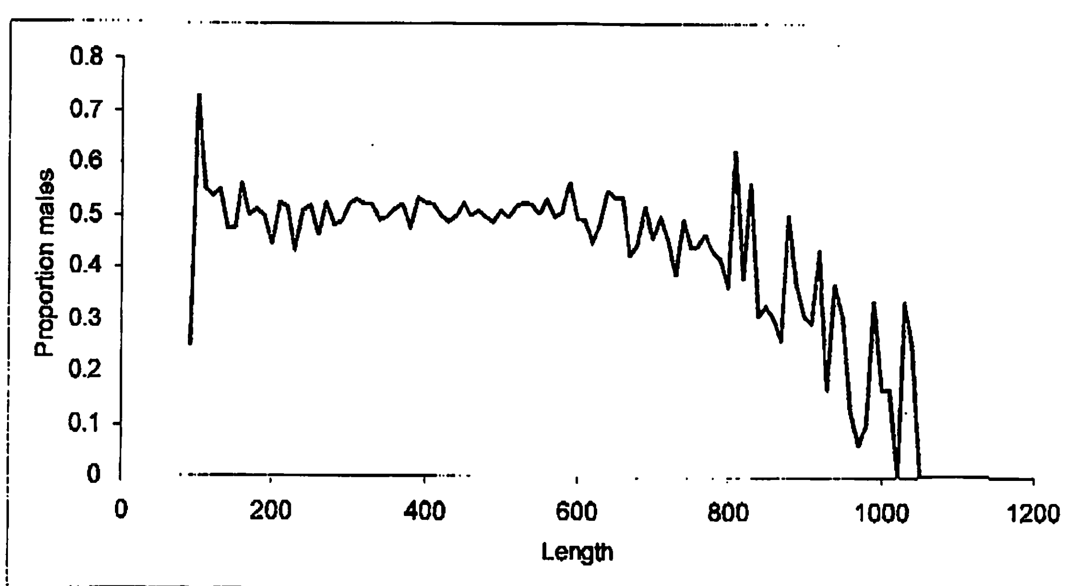

Figure 9. Proportion males by length

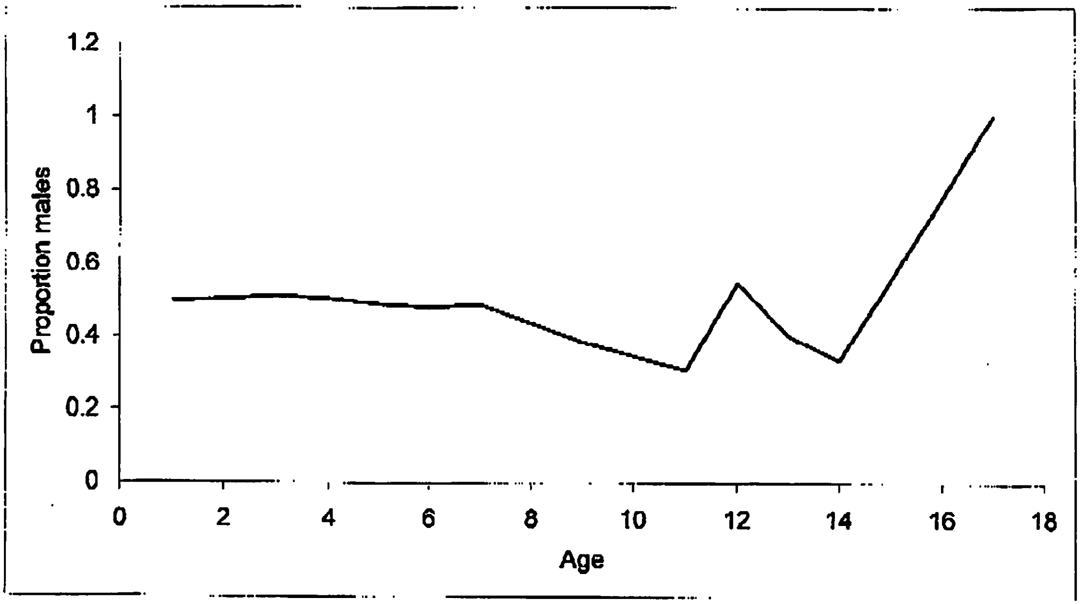

Figure 10. Proportion males by age

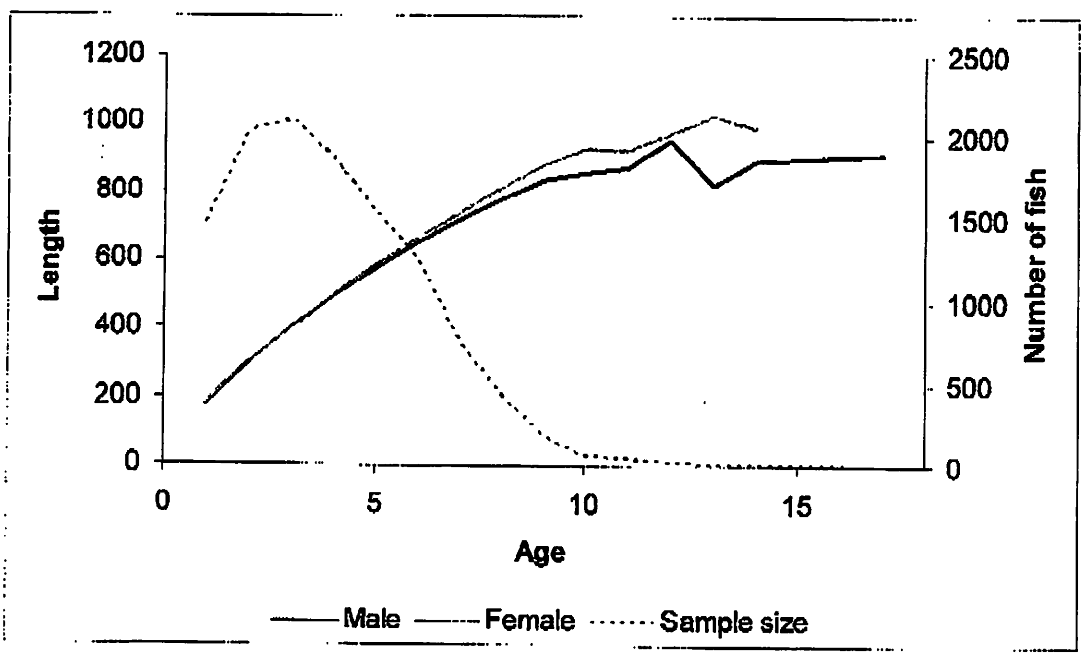

Figure 11. Mean length-at-age by gender

CPUE data

The assessment author showed that when the survey and longline CPUE data were compared for the same season and the same area, the trends were much more similar. Modification to incorporate selectivity may further improve the correlations. This helps towards resolving the inconsistency between the survey data and the CPUE. It also suggests that there may be local depletion and that spatial structure should be considered in the stock assessment and management of Pacific cod. Tagging information indicates that movement may be restricted. Unfortunately, the tagging data is unreliable with respect to movement estimation.

Gulf of Alaska stock assessment

There are still several major issues with the GOA stock assessment. The value for catchability had to be fixed at a value that was consistent with the archival tagging data (selectivity at lengths 60-81cm multiplied by catchability equals 0.92 obtained by the archival tagging data). The age two fish are missing from the survey aging data and the age data sample size had to be reduced substantially. The results of the GOA stock assessment are les reliable than the Bering Sea stock assessment.

Public requested stock assessments

The Assessment Team allowed the public to request model scenarios that would be evaluated. This is a very valuable tool for interest groups to have input into the stock assessment. However, there are several issues that make the decision about which model scenarios should be requested. The Assessment Team provides the stock assessment models to the public well in advance of the Plan Team meetings. However, the exact model scenarios that the Assessment Team will present are unknown at the time model scenarios can be requested by the public. This makes it difficult to decide on which model scenarios should be requested. For example, the Assessment Team may discover an appropriate model configuration for which the Public is unaware and any model requests that do not include this model structure will likely be eliminated as possible candidates.

The requested model scenario needs to be something that will be accepted by the Plan Team and the SSC. In general, the Plan Team and SSC will not select a model that is not presented by the Assessment Team. Therefore, they will not take a component of a model requested by the public and request that the Assessment Team rerun their base case model with that modification. Any model requested by the Public needs to take into consideration the previous decisions by the Plan Team and SSC. Our tactic to address this issue was to request models that modified what the Assessment Team chose as a base case model. However, in hindsight we made a mistake in our efforts to emphasize the problems with the age data. Because the SSC stressed that the model should include the age data, Model D2, which we requested and uses a more consistent method to determine natural mortality from life history theory, was eliminated as a possible candidate model. If Model D2 could have been rerun including the age data, it would have had a good chance of being selected as the best model.

Only a few models can be requested by the public otherwise the Assessment Team will be overwhelmed, the requested models will not all be implemented, and the ability to request models may be eliminated in the future.

The Assessment Teams results and model files are available several days before the Plan Team Meeting. This allows the Public to investigate the model and results. However, the Plan Team and SSC generally will not select a model presented by the Public. In the first round of meetings this is less of a concern because the Assessment Team, often under the advice of the Plan Team or SSC, will take the comments of the Public under consideration when revising the model. However, in the second set of meetings this is not possible. Therefore, it is important to determine the best model at the first set of meetings, so that the Assessment Team does not change their base case model, otherwise any model requested by the public is unlikely to be accepted by the Plan Team and SSC.

Other comments
Determining which fisheries have an asymptotic selectivity is somewhat problematic due to the different peaks in the length-frequency distributions among years. Some of the fisheries have low sample size and low catch. It is likely that the information from length-frequency data is much more influential than having the exact age of fish removed from the population. In this case, for small fisheries that have uncertain characteristics, it may be more reasonable to just remove the catch at an appropriate age rather than trying to use the length-frequency data. This could be done by sharing the selectivity of these fisheries with similar fisheries (or fixing them at appropriate values) and eliminating the length-frequency data. Other methods can also be used to down weight the influence of these length frequency data (e.g. reduce the sample size used in the model, increase the number of selectivity parameters).

Shi el al. (2007) used tagging data to illustrate the possibility of dome shape selectivity or increasing natural mortality at older ages, and to estimate natural mortality. It may be useful to reanalyze this data with the intention to estimate age-specific and perhaps sex specific natural mortality.

The value of natural mortality estimated in model D2 from length at maturity was lower than expected. This method should be further investigated to determine its properties.

The survey time series shows some inconsistencies with the model assumptions. The model is unable to fit the high numbers estimated for 1994 and 2001. The only way that the numbers can go up in the survey estimates is through recruitment because growth does not enter into the calculations. Therefore, the misfit in 1994 may be due to increased catchability in that year as it is unlikely that the recruitment was high enough to double the number of fish (although the estimate of age one selectivity is lower in that year; Figure 4. This is unexpected because a higher selectivity would fit the survey numbers better. There must be information in the age or length frequency data that supports a low selectivity for one year olds in 1994). Similarly in 2001 and 2007, but to a lesser extent. The increased catchability may be due to the vertical distribution of cod. There may be a nonlinear relationship between the survey index and abundance due to a higher percentage of cod having to feed close to the bottom when the abundance is high. Perhaps cod bycatch size structure in the pollock pelagic trawl fishery may provide insight into this hypothesis.

References

Shi, Y, Gunderson, D.R., Munro, P., and Urban, J.D. 2007. Estimating movement rates of Pacific cod (Gadus macrocephalus) in the Bering Sea and the Gulf of Alaska using mark-recapture methods. NPRB Project 620 Final Report

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December 3, 2008

By facsimile to: 907-271-2817

Eric A. Olson, Chairman
North Pacific Fishery Management Council
605 W 4th Avenue, Suite 306
Anchorage, AK 99501-2252

Re: Agenda Item C-3, Groundfish Catch Specifications

Dear Chairman Olson:

I am writing on behalf of the Independent Cod Trawlers Association, whose members are Charles Burrece, Omar Allinson, and Steve Aarvik. As you know, they are owners of three non-AFA trawl catcher vessels engaged in the BSAI fisheries.

The inshore AFA catcher vessels have consistently failed to harvest their B Season TAC for pollock. Because they have received a monopoly under the American Fisheries Act with respect to the harvesting of pollock, the optimum yield of B Season TAC has been remaining unharvested.

This occurrence is inconsistent with National Standards 1, 5, and 8, which provide as follows:

(1) Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States Fishing industry.

* * *

(5) Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.

* * *

(8) Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.

Under Section 211 of the American Fisheries Act, the North Pacific Fishery Management Council has the authority to recommend conservation and management measures which it finds to be necessary to protect non-AFA fisheries and their participants, including processors, from adverse impacts caused by the AFA or fishery cooperatives in the directed pollock fishery. A number of fishermen have been adversely impacted by the AFA and the operation of the cooperatives authorized by the AFA. Communities are harmed by the failure of the AFA inshore fleet to harvest all of the B Season pollock TAC.

One method which would be available to lessen those adverse impacts, and would be consistent with National Standards 1, 5, and 8, would be for the unused B Season TAC to be made available to adversely impacted non-AFA catcher vessels or to other entities which would utilize it.

I am writing to request that the Council create an agenda item to consider and deal with the fact that so much of the pollock TAC is remaining unharvested, with the effect that optimum yield is not being realized year after year.

In the event that the Council determines that it is constrained by the AFA to an extent such that curative measures may not be effected, the Council is requested to bring this inconsistency with the requirements of the Magnuson-Stevens Fishery Conservation and Management Act to the attention of Congress for possible remedy in that forum.

Thank you very much for your consideration of this request.

Sincerely,

Russell W. Pritchett

#361/allinson-olson.fx
#135A

WWF

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December 3, 2008

Mr. Eric Olson, Chair
North Pacific Fishery Management Council
605 W. 4th Street, Suite 306
Anchorage, AK 99501-2252

Mr. Doug Mecum, Acting Regional Administrator
NOAA Fisheries, Alaska Region
709 W. 9th Street
Juneau, AK 99802-1668

Re: Pollock TAC Specifications

Dear Mr. Olson and Mr. Mecum,

On behalf of World Wildlife Fund (WWF), I am pleased to submit comments regarding the North Pacific Fishery Management Council's (Council) consideration of Total Allowable Catch (TAC) specifications for the groundfish fishery.

WWF wishes to express concern regarding the recent declines in the Eastern Bering Sea (EBS) pollock stocks. While we recognize that the 2006 year class indicates improved recruitment despite poor recruitment in recent years, we believe that the pollock assessment fails to adequately address interception of EBS pollock stocks in the Russian pollock fishery.

As clearly demonstrated during the recent fishing season, U.S. fishermen are travelling farther north and west in an effort to conduct their harvests successfully. Many believe that climate change is driving this migration of pollock stocks and that this trend could likely continue. Between 10% and 30% of the EBS pollock stock may enter Russian waters. Harvests in Russia's Navarin Basin and along the U.S.-Russian maritime boundary are largely unknown and unaccounted for in U.S. stock assessments. As a result of this failure to adequately account for intercepted EBS pollock, the current EBS pollock stock assessment ultimately fails to reflect the appropriate BMSY and B40% targets.

We believe that a more precautionary approach to the TAC setting process for the EBS pollock stock is warranted given the uncertainty associated with climate change and Russian fishing pressure. As one of the most intensively and successfully managed fisheries, it would be a tragedy for a variable outside the Council and NOAA's purview to result in overfishing the EBS pollock fishery.

In conclusion, WWF recommends that TAC calculations reflect the uncertainty associated with the unknown level of pollock harvest in Russian waters. We also recommend that the Council, NOAA, and the U.S. Department of State engage in aggressive negotiations with the Russian government to gain access to important information such as catch statistics and stock assessments for the transboundary EBS pollock stock. Until we fully understand the impacts of the Russian fisheries on this shared stock in addition to the effects of climate change, we risk the potential collapse of the EBS pollock fishery.

Thank you for your time and consideration of these comments.

Respectfully,

Alfred Lee "Bubba" Cook Jr.
Kamchatka/Bering Sea Ecoregion Senior Fisheries Program Officer
World Wildlife Fund

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December 8, 2008

Mr. Eric Olson, Chair
North Pacific Fishery Management Council
605 W. Fourth Avenue, Suite 306
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Mr. Doug Mecum, Regional Administrator
National Marine Fisheries Service, Alaska Region
709 W. Ninth Street
Juneau, AK 99802-1668

RE: Agenda item C-3
2009-2010 Groundfish Quota Specifications

Dear Chairman Olson and Mr. Mecum:

Each year, the National Marine Fisheries Service (NMFS), with advice from the North Pacific Fishery Management Council, authorizes fisheries that capture billions of wild fish from the Bering Sea, Aleutian Islands, and Gulf of Alaska. These fisheries and your decisions about managing them have significant impacts on the marine ecosystems off Alaska. With female spawning biomass in the Eastern Bering Sea (EBS) pollock stock having declined by almost 60% since 2004, you must strike a balance between fishing levels and very real concerns about the health of this stock and the health of the ecosystem. For the reasons explained below, we strongly encourage the Council and NMFS to act in a precautionary manner by setting the EBS pollock catch limits using the Tier 3 recommendations as follows:

Tier	Year	Max ABC	OFL
3b	2009	458 thousand mt	564 thousand mt
3b	2010	875 thousand mt	1,069 thousand mt

Pollock play a central role in the Bering Sea food web and are the most intensely fished species in Alaska. Pollock also form a critical link between the planktonic productivity of the EBS and the higher trophic levels it supports. Pollock are important prey for marine mammals, seabirds, and other fish. The high fishing pressure that the EBS pollock stock is currently experiencing threatens this important role in the ecosystem.

In recognition of the importance pollock play in the food web, particularly for the endangered Steller sea lion, the pollock fishery is subject to an explicit management threshold. This threshold mandates that all fishing for pollock must stop if the "spawning biomass . . . will be equal to or below 20 percent of the projected unfished spawning biomass."[1] Not only will it shut the fishery down if a stock reaches $B_{20\%}$, but this rule would keep it closed until the stock is projected to "exceed 20 percent of the unfished spawning biomass."[2] If it were triggered, this measure would have a dramatic impact on the pollock industry.

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[1] 50 C.F.R. 679.20(d)(4).

[2] *Id.* The "harvest control for pollock, Atka mackerel, and Pacific cod" states fully:

> If a biological assessment of stock condition for pollock, Pacific cod, or Atka mackerel within an area projects that the spawning biomass in that area will be equal to or below 20 percent of the projected unfished spawning biomass during a fishing year, the Regional Administrator *will* prohibit the directed fishery for the relevant species within the area. The Regional Administrator will prohibit the directed fishery under this paragraph by notification published in the Federal

The EBS pollock stock is very close to this $B_{20\%}$ threshold and may be below it. Your decisions about management of the pollock fishery this year should be dedicated to rebuilding the spawning biomass rather than continuing to skirt the threshold of fishery closure. The proximity of the stock to that threshold depends on the way in which the phrase "projected unfished spawning biomass" is interpreted. If the projected unfished spawning biomass is interpreted as B_0, and thus equal to 4,980 thousand mt, as used in the draft stock assessment, then the 2008 spawning biomass has been reduced to 25% of unfished spawning biomass. In this estimation, the stock has a 15% probability of being below the $B_{20\%}$ threshold.[3] However, if projected unfished spawning biomass is consistent with the Amendment 56 reference points for overfishing thresholds, then $B_{100\%}$ is equal to 6,068 thousand mt, and the 2008 spawning biomass has been reduced to 21% of unfished spawning biomass. In that case, the stock has a 35% probability of being below the $B_{20\%}$ threshold. The stock, therefore, could be barely hovering over the $B_{20\%}$ threshold with a substantial probability of being below it. We strongly encourage the Council and NMFS to act in a precautionary manner to prevent this stock from reaching the threshold that would trigger a last-ditch effort to protect the Bering Sea food web and shut down the pollock fishery.

Much rests on the 2006 pollock year class. These fish would just be turning 3 years old in 2009, and there is hope that a mass of these young fish would alleviate the high fishing pressure on the remaining adult spawning biomass. Nonetheless, the stock assessment authors acknowledge that a high degree of uncertainty exists as to the magnitude of the 2006 year class. Future stock size predictions, thus, are also uncertain. Moreover, because there are no indications that there is a year class with good recruitment before or after 2006, uncertainty is even greater about the future of EBS pollock stock.

While the EBS pollock stock's designation as 'Tier 1' allows the current high fishing pressure, the stock may not be able to bear this pressure ecologically, especially if an unforeseen climatic fluctuation occurs. Tier 1 status implies that scientists know a great deal about the past and future trajectory of the pollock stock. Little is known, however, about the relative contribution to recruitment of the various spawning aggregations of pollock that may spawn at different times of year. In addition, the effects of targeted fishing on spawning aggregations of pollock are not taken into account. Further, data sets from the past may not be as informative as we enter an uncertain regime of climate change.

For these reasons, we recommend that the Council and NMFS act in a precautionary manner in order to keep the EBS pollock stock above the $B_{20\%}$ threshold. The EBS pollock TAC should be set using the more risk-averse Tier 3 recommendations.

Sincerely,

Jim Ayers
Vice President, Oceana

> Register. The directed fishery will remain closed until a subsequent biological assessment projects that the spawning biomass for the species in the area will exceed 20 percent of the projected unfished spawning biomass during a fishing year.

Id. (emphasis added).

[3] Draft NPFMC Bering Sea and Aleutian Islands SAFE, October 2008 Plan Team Draft, EBS Pollock, page 14 (2008).

C-3
Geo Pletnikoff

TESTIMONY NPFMC 12 DECEMBER 2008

MR. CHAIRMAN:

Comments on agenda item C-3, Groundfish specs.

IF I UNDERSTAND IT CORRECTLY, YOUR MODEL USED TO DETERMINE THE TOTAL BIOMASS OF POLLOCK OF THE GULF OF ALASKA, SHELIKOFF STRAIGHT AND THE ALEUTIAN ISLANDS HAS BEEN FUNDAMENTALLY FLAWED. LOOKING AT THE INFORMATION PROVIDED BY YOUR SCIENTISTS, THE MODELS SIMPLY LISTS THE AMOUNT OF FISH IN EACH SPECIES BUT DOES NOT ADDRESS THE INTERACTIONS OF THESE SPECIES, ESPECIALLY WHEN SO MUCH OF ONE SPECIE IS REMOVED. NOW WE HAVE ANOTHER SPECIE, THE ARROWTOOTH FLOUNDER REPLACING THE POLLOCK IN THE BERING SEA AS THE DOMINATE SPECIE. NOW THE BERING SEA IS DIRTY.

WE NEED TO CONSIDER OTHER INDICATORS WHICH GIVE US ANOTHER VIEW OF THE IMPACTS OF A SMALLER THAN ANTICIPATED BIOMASS OF POLLOCK IN THE BERING SEA. DECLINES IN MARINE MAMMALS WHO ARE DEPENDENT ON POLLOCK FOR FOOD. ALTHOUGH SOME STUDIES DONE ON THE FOOD OF CHOICE NEEDED BY THE ENDANGERED WESTERN

STELLER SEA LION POPULATIONS, THESE MAMMALS ARE NOT RECOVERING. AND AS A MATTER OF FACT, THEY ARE STILL DECLINING. SO TOO ARE THE NORTHERN FUR SEALS OF THE PRIBILOF ISLANDS, AS ARE THE MARINE BIRDS, ALL WHO AT ONE STAGE OF THE POLLOCK'S LIFE CYCLE, ARE DEPENDENT ON POLLOCK FOR FOOD. THESE ARE VERY SERIOUS CHANGES HAPPENING IN OUR HOME. SOME CAN SAY, WELL, ITS NOT BECAUSE OF THE POLLOCK FISHERY, ITS CLIMATE CHANGE. WE SAY, IF WE DON'T KNOW LETS NOT THROW THE DICE AND HOPE THE BIOMASS WILL RECOVER IN FUTURE YEARS. ITS TOO MUCH OF A GAMBLE, WITH VERY SERIOUS REPERCUSSIONS NOT ONLY ON THE OVERALL ECOSYSTEM, BUT AS EQUALLY IMPORTANT, POSSIBLE SERIOUS NEGATIVE IMPACTS ON OUR VILLAGES. PLEASE DON'T PUT POLITICS AHEAD OF OUR NEEDS.

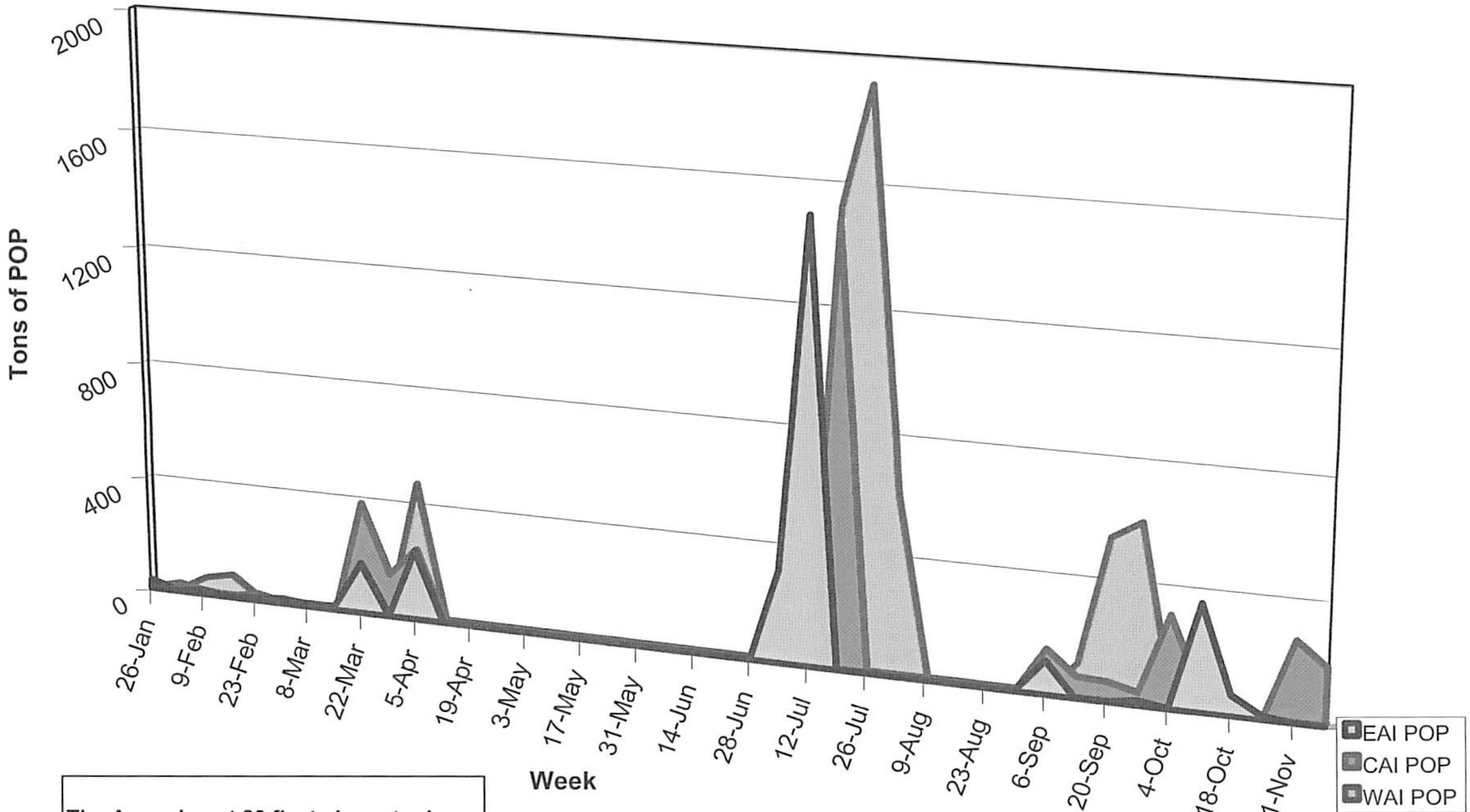
WE ARE ASKING THREE THINGS OF YOU. 1.) REDUCE THE TAC TO AT LEAST 458,000 MT'S TO GIVE THE FISH A FIGHTING CHANCE TO RECOVER. TO GIVE THE ECOSYSTEM A BREAK FROM OVER 30 YEARS OF CONSTANT BADGERING. 2.) WE MUST SUSPEND THE POLLOCK ROE FISHERY. THIS SHOULD GO WITHOUT QUESTION. WITHOUT THE CHANCE OF THESE FISH TO

SPAWN, AND SPAWN SUCCESSFULLY, WE WILL NOT SEE ANY RECOVERY IN THE NEAR FUTURE. THEY TOO NEED A BREAK. AND FINALLY, 3.) WE NEED TO ESTABLISH NO TAKE MARINE RESERVES OR MARINE CULTURAL HERITAGE ZONES TO PROTECT CRITICAL HABITAT. ALL OVER THE WORLD IN OUR OCEANS, IT HAS BEEN DEMONSTRATED THAT WHERE MARINE RESERVES HAVE BEEN ESTABLISHED, THE RESULT IS A HEALTHY POPULATION RECOVERY OF OVER FISHED POPULATION. AGAIN WE HAVE TO GIVE THE FISH A FIGHTING CHANCE TO REBOUND, ESPECIALLY AS WE ARE ENTERING AN UNKNOWN DELIMMA IN CLIMATE CHANGE AND OCEAN ACIDITY. YOU HAVE IN YOUR PACKET A LETTER SIGNED BY OVER 20 ORGANIZATIONS AND 60 SCIENTISTS ALL ASKING THAT YOU LOWER THE TAC FOR POLLOCK IN THE BERING SEA TO A MORE RESPONSIBLE LEVEL. I HAVE ALSO A PETITION WHICH I AM SUBMITTING FOR THE RECORD SIGNED BY OVER 18,500 PEOPLE REQUESTING THE SAME.

THANK YOU VERY MUCH.

GEORGE PLETNIKOFF
GREENPEACE

2008 AI POP Harvest by Week



The Amendment 80 fleet chose to do almost all of their targeted POP fishing in 2008 after July 1st

Dave Fraser C-3