


MEMORANDUM

TO: Council, SSC and AP Members

FROM: Clarence G. Pautzke
Executive Director 

DATE: September 24, 1998

SUBJECT: Initial GOA Groundfish Specifications for 1999

ESTIMATED TIME
2 HOURS
(for all D-2 Items)

ACTION REQUIRED

- (d) Review Preliminary 1998 GOA Final Stock Assessment and Fishery Evaluation (SAFE) document.
- (e) Approve preliminary GOA groundfish and bycatch specifications for 1998.
- (f) Receive Plan Team report on Eastern GOA boundary change.

BACKGROUND

While the Council approved Amendment 48 to streamline the specification process in June 1998, it has not yet been submitted to the Secretary and is not yet in effect. The preliminary SAFE report, groundfish ABCs and TACs, and bycatch apportionments need to be approved and made available for public review and comment. These initial specifications will be used for management of the 1999 groundfish fisheries until superseded by publication of the Council's final specifications. As no new ABC recommendations were made at its September 1998 meeting, the GOA Plan Team has recommended rolling over all 1998 final specifications as initial specifications for 1999, following the recommendations in Amendment 48. In November, the Plan team will be making OFL and ABC recommendations based on new stock assessments for all GOA groundfish species. The Council will adopt final recommendations for the 1999 fishing year at its December meeting, based on the November 1998 SAFE report.

(d) GOA SAFE Document

The groundfish Plan Teams met in Seattle during September 15-17, to prepare the preliminary SAFE documents provided at this meeting. The preliminary 1998 GOA SAFE contains only two chapters, for walleye pollock and arrowtooth flounder. No new ABC recommendations are provided in the SAFE report. GOA plan team minutes are attached as Item D-2(d)(1) and Joint team minutes are attached as Item D-3(d)(2).

(e) Preliminary ABCs and TACs

The attached table from the SAFE lists the 1998 final specifications and comprise the GOA Plan Team's recommended 1999 ABCs and corresponding overfishing levels for each of the species or species complexes (Item D-2(d)(3)).

TAC considerations for State waters Pacific cod fishery

Beginning in 1997, the Council has reduced the GOA Pacific cod TAC to account for removals from the State waters P. cod fisheries. In December 1997, the Council allowed for the automatic increase in the Kodiak subarea and reduced the Central area TAC accordingly. At its December meeting, the BOF decided to rescind that automatic increase for 1998 in the Kodiak area. NMFS subsequently made the correction to the final specifications as listed in the box at right

According to ADF&G, Chignik, and the Alaska Peninsula likely will take their full allocations in 1998, while Prince William Sound and Cook Inlet/N. Gulf Coast will not (Item D-2(d)(4)). Because the federal fishery will reopen in the Central area on October 5 and all cod landings will count against the federal TAC, it is unknown at this point if Kodiak will reach its GHL. If Kodiak, Chignik and Alaska Peninsula achieve their full allocation before the end of the year, they will automatically ramp up in 1999. Using these projected increases in state water GHLs and last year's ABCs the federal TAC for P. cod would be adjusted as listed at right.

Theoretically, the Board of Fisheries could cap the Kodiak and Chignik harvests at this year's level, because both those areas are "in-cycle" this coming fall. The ramp-up of the Alaska Peninsula quota could only be stopped if the Board responded favorably to an agenda change request filed by September 29, 1998.

A second issue concerned the release of unharvested State-water's TAC back to the federal fishery prior to October 1. ADF&G noted that a framework mechanism with appropriate criteria is needed by ADF&G to give them flexibility to return unused cod to the federal fishery. While it will not be needed in 1998 because the quotas for Kodiak, Chignik and Alaska Peninsula likely will be fully utilized, it could be needed in future years as the State quotas are increased. ADF&G was requested to develop a mechanism for transferring unharvested State quota to the federal fisheries in time for the fleet to respond to the additional quota. The Board will discuss this issue at their December meeting.

1998 Gulf Pacific cod ABC, TAC and State guideline harvest level (mt).				
Specifications	Western	Central	Eastern	Total
ABC	27,260	49,080	1,560	77,900
BOF GHL	4,090	7,360	400	11,840
(%)	15	15	25	15.2
TAC	23,170	41,720	1,170	66,060
	Cook Inlet	1,104	2.25%	
	Kodiak	3,680	7.5%	
	<u>Chignik</u>	<u>2,576</u>	<u>5.25%</u>	
	Central	7,360	15%	

1999 Gulf Pacific cod ABC, TAC and State guideline harvest level (mt).				
Specifications	Western	Central	Eastern	Total
ABC	27,260	49,080	1,560	77,900
BOF GHL	5,452	9,448	400	15,290
(%)	20	19.25	25	19.6
TAC	21,808	39,632	1,170	62,610
	Cook Inlet	1,104	2.25%	
	Kodiak	4,908	10.0%	
	<u>Chignik</u>	<u>3,436</u>	<u>7.0%</u>	
	Central	9,448	19.25%	

Initial PSC Limits for Halibut

As part of streamlining, the PSC limits for halibut in the Gulf of Alaska would also be rolled over for the start of the 1999 fishing year.

Trawl gear		Hook and Line	
1st quarter	600 mt (30%)	1st trimester	250 mt (86%)
2nd quarter	400 mt (20%)	2nd trimester	15 mt (5%)
3rd quarter	600 mt (30%)	3rd trimester	25 mt (9%)
4th quarter	400 mt (20%)	DSR	10 mt
2,000 mt		300 mt	

Quarter	Trawl apportionments		Total
	Shallow water Complex	Deep water Complex	
1	500 mt	100 mt	600 mt
2	100 mt	300 mt	400 mt
3	200 mt	400 mt	600 mt
4	No apportionment		400 mt

Halibut Discard Mortality Rates

The GOA and BSAI SAFE reports contain recommendations by IPHC staff for managing halibut bycatch in 1999. Item D-2(d)(5) lists the IPHC recommendations for setting discard mortality rates for the 1999 fishery. A number of modifications to the methodology used by IPHC were made to the report as recommended by the Plan Teams and SSC. Gregg Williams, IPHC, will present this report.

(f) Plan Team Report on Eastern GOA Boundary Change

The GOA Plan Team reviewed the weighting schemes derived from the 1990, 1993, and 1996 GOA trawl surveys presented by Michael Martin (RACE Division) to calculate separate West Yakutat/East Yakutat-Southeast Outside ABCs to account for the prohibition of trawling in the East Yakutat-Southeast Outside subarea (east of 140°). Team members expressed concerns regarding the expansion of survey catches by strata where some areas were not surveyed and possible tradeoffs between post-stratification of the survey and adding an additional management line. The Team may recommend to maintain the EGOA ABC and TAC, except where biological reasons (i.e., depletion) indicate a need for an ABC split. The Team identified pollock and some flatfish and rockfish species for which separate ABCs may be needed.

For the November Plan Team meeting, the Team requested that RACE provide an estimate of the variance of the survey biomass distributions. The Team will provide further guidance after reviewing this and other related assessment information in November.

**GOA Plan Team Meeting Minutes
September 16, 1998**

Sandra Lowe (NMFS-AFSC, Chair)
Bill Bechtol (ADF&G)
Meghan Cartwright for Tory O'Connell (ADF&G)
Jane DiCosimo (NPFMC)
Jeff Fujioka (NMFS-AB)
Lew Haldorsen (UAF)
Jon Heifetz (NMFS-AB)

Jim Ianelli (NMFS-AFSC)
Vivian Mendenhall (USFWS)
Tom Pearson (NMFS-AKRO)
John Sease (MML)
Farron Wallace (WDF)
Gregg Williams (IPHC)
Absent: Jim Hastie (NMFS AFSC)

Pollock. The 1998 Shelikof Strait EIT survey results continue to show a weak 1995 and 1996 year class and a moderate 1997 year class. The preliminary 1998 FOCI recruitment forecast indicates an average year class. The new model configuration allows confidence bounds on ending biomass and projected 1999 yield. The Team recommended the following explorations of model configurations: 1) continue to explore partitioning the EIT survey into 2 time series based on the usage of old and new technology; 2) provide rationale for the level of complexity of the current model and explore a more parsimonious model; 3) explore a relaxation of the assumption of bottom trawl survey asymptotic selectivity; and 4) incorporate a simpler selectivity parameterization. In addition, the Team recommended a model configuration using AD model builder software that matches to the extent possible, the previous stock synthesis model.

Bill Bechtol provided a brief report on the results of the ADF&G acoustic survey in Prince William Sound. ADF&G and NMFS analysts will exchange data for inclusion in the model for November.

Arrowtooth flounder. In 1998, the Synthesis model will be used for arrowtooth flounder. An appendix to the preliminary chapter contains a new model using AD Model Builder. In 1999, AD Model Builder will be used in the stock assessment. Results from a herding experiment by AFSC may provide information to reestimate q in next year's model.

EGOA Split. The GOA Plan Team reviewed the weighting schemes derived from the 1990, 1993, and 1996 GOA trawl surveys presented by Michael Martin (RACE Division) to calculate separate West Yakutat/East Yakutat-Southeast Outside ABCs to account for the prohibition of trawling in the East Yakutat-Southeast Outside subarea (east of 140°). Team members expressed concerns regarding the expansion of survey catches by strata where some areas were not surveyed and possible tradeoffs between post-stratification of the survey and adding an additional management line. The Team may recommend to maintain the EGOA ABC and TAC, except where biological reasons (i.e., depletion) indicate a need for an ABC split. The Team identified pollock and some flatfish and rockfish species for which separate ABCs may be needed.

For the November Plan Team meeting, the Team requested that RACE provide an estimate of the variance of the survey biomass distributions. The Team will provide further guidance after reviewing this and other related assessment information in November.

Other business. Chris Blackburn raised a question regarding the impacts of high catches of small Pacific ocean perch in local areas. The Team responded that POP aggregation appears to be site-specific and localized depletion could occur. Analysts can look at location of catches to determine if removals are concentrated on local populations.

Jon Heifetz gave a brief report on an adaptive sampling trawl survey for rockfish conducted this summer. A full report will be provided in November.

Others in attendance: Mary Furuness, Chris Blackburn, Anne Hollowed, Tom Wilderbuer.

**BSAI and GOA Joint Plan Team Meeting
Joint Report
September 15-17, 1998**

Bering Sea/Aleutian Islands

Loh-lee Low (NMFS AFSC, Chair)
Dave Ackley (ADF&G)
Rich Ferrero (MML)
Vivian Mendenhall (USFWS)
Brenda Norcross (UAF)
Mike Sigler (NMFS-ABL)
Andy Smoker (NMFS-AKRO)
Grant Thompson (NMFS AFSC)
Ivan Vining (ADF&G)
Farron Wallace (WDF)
Gregg Williams (IPHC)
Dave Witherell (NPFMC)

Gulf of Alaska

Sandra Lowe (NMFS-AFSC, Chair)
Bill Bechtol (ADF&G)
Meghan Cartwright for Tory O'Connell (ADF&G)
Jane DiCosimo (NPFMC)
Jeff Fujioka (NMFS-AB)
Lew Haldorsen (UAF)
Jon Heifetz (NMFS-AB)
Jim Ianelli (NMFS-AFSC)
Vivian Mendenhall (USFWS)
Tom Pearson (NMFS-AKRO)
John Sease (MML)
Farron Wallace (WDF)
Gregg Williams (IPHC)

TAC streamlining. The teams received a report that plan amendments to the BSAI and GOA FMPs to revise the annual specifications process was approved by the Council and are under review at the NMFS Alaska Regional Office. They have not yet been submitted to the Secretary and will not be in effect for January 1, 1999. Nevertheless, the Team is operating under a streamlined approach to preparation of the SAFEs. No ABC recommendations will be provided at the preliminary meetings; however, the Teams recommend approving the 1998 final specifications as preliminary 1999 specifications. Final ABC and OFL recommendations will be made in the November SAFE report.

Joint Team Report. The teams will convene jointly at the September Preliminary Meeting each year and may review some stock assessments in the joint sessions. The teams will separate to review stock assessment chapters. Separate SAFE reports or a Joint Team Report will be prepared. The report(s) will include executive summary tables from the previous year's final SAFE, updated catch data and final specifications tables, new assessment chapters, other selected reports, and team recommendations.

Essential Fish Habitat Core Team Report. EFH concerns will be included in the annual SAFEs in a habitat section in the Ecosystem Chapter. The Essential Fish Habitat Core Team defined habitat areas of particular concern: living substrates in shallow water, living substrates in deep water (e.g., corals), and anadromous fish streams. Known concentrations of fish in state and federal waters also have been identified. The Core Team will provide a progress report of its research plan at each September Joint Plan Team Meeting. Assessment authors will be requested to incorporate new information on essential fish habitat in the Final SAFE chapter. In 1998, \$356,000 baseline funding was received for five research projects: ADF&G Kenai GIS; Atka mackerel spawning habitat; groundfish ROV research in Southeast; eelgrass inventory and community utilization by rockfish assemblages in Craig/Prince of Wales Island; species assemblages associated with emergent wetland vegetation in Mendenhall Wetlands area. The results of other studies on the effects of fishing gear on seafloor habitat in the Gulf and Bering Sea and ROV study in the Atka mackerel fishing area in the Aleutian chain will also be incorporated into the Ecosystem chapter. Industry is funding a fellowship at the UAF to study the effects of trawling on flatfish habitat in shallow habitat. Bottom mapping data from the Navy may enhance area-swept estimates. The Rockfish Working Group is conducting research to map habitat to assess shortraker/rougheye rockfish concentrations off the continental slope.

Ecosystem Considerations Chapter. The Plan Team recommended adopting the proposed draft outline for the

chapter as a long term goal. This information will assist the Council in considering ecosystem issues that were not quantified in the assessment chapters. Team recommendations included: (1) revising the outline such that II.B. is renamed EFH and 'Pollutants/contaminants' will be incorporated under that heading; (2) add a section on research needs; (3) avoid redundancies in the outline. Additional comments will be forwarded to Pat Livingston, who will coordinate development of the revised chapter for 1999.

Short term goal for the November 1998 SAFE will be an update on marine mammals, seabirds, research, EFH, oceanographic concerns. This chapter will be coordinated by David Witherell. The Teams also recommended that assessment authors incorporate information on ecosystem concerns in the Final SAFE chapter.

Overfishing Level. The Joint Team received a report by Grant Thompson on the status of Amendment 56/56. A decision is pending by the AFSC Director on whether Amendment 56/56 complies with the recently released National Standard Guidelines. In June, the SSC requested that the Plan Teams consider changes to OFL and ABC. Given the uncertainty related to the status of the amendment, the teams recommended that authors continue to use the current definitions. The Teams discussed improvements to the guidelines, including use of a minimum stock size threshold (MSST).

Overview of ESA Section 7 consultations. Tim Ragen, NMFS/AKRO Protected Resources Division, provided an overview of the NMFS ESA Section 7 consultation procedures. Two biological opinions are currently being compiled on: (1) the BSAI and GOA pollock fisheries and the BSAI Atka mackerel fishery; and (2) the groundfish SEIS.

Halibut Discard Mortality Report. Gregg Williams, IPHC, provided a draft report of proposed 1999 halibut DMRs. Lower rates presented in the report are due to lower halibut bycatches in 1997. A number of changes suggested by the Plan Teams and SSC are now included in the report, e.g., variances are now applied to the rates. A final report will be prepared for November.

Groundfish Proposals. The Teams reviewed 39 groundfish proposals submitted for Council review. Joint Team recommendations are provided in the attached table. Eleven proposals were ranked high, three were ranked moderate/high, one was ranked as moderate, one was ranked as moderate/low, and 16 were ranked as low priorities. Seven proposals were ranked as in progress.

Others in attendance: Chris Shuck, Mary Furuness, Shane Capron, Chris Blackburn, Pat Livingston, Anne Hollowed, Tom Wilderbuer, Dorothy Childers, Ken Stump, Paul Clarke, Brent Paine, Jim McManus, Jerry Brennan, Mike Szymanski, John Gauvin.

GULF OF ALASKA GROUND FISH ABCs and TACs								
Final 1998 North Pacific Fishery Management Council Specifications (mt)								
Species	Area	1997			1998			
		ABC	TAC	Catch*	OFL	ABC	TAC	Catch
Pollock	W (61)	18,600	18,600	26,141		29,790	29,790	21,767
	C (62)	31,250	31,250	32,839	170,500	50,045	50,045	23,709
	C (63)	24,550	24,550	25,023		39,315	39,315	23,190
	E	5,580	5,580	5,890	15,600	10,850	5,580	6,363
	Total	79,980	79,980	89,893	186,100	130,000	124,730	75,029
Pacific Cod**	W	28,500	24,225	23,932		27,260	23,170	19,670
	C	51,400	43,690	43,677		49,080	41,720	38,429
	E	1,600	1,200	865		1,560	1,170	780
	Total	81,500	69,115	68,474	141,000	77,900	66,060	58,879
Flatfish, Deep Water	W	340	340	13		340	340	15
	C	3,690	3,690	2,644		3,690	3,690	2,272
	E	3,140	3,140	1,007		3,140	3,140	101
	Total	7,170	7,170	3,664	9,440	7,170	7,170	2,388
	Rex Sole	W	1,190	1,190	681		1,190	1,190
	C	5,490	5,490	2,436		5,490	5,490	2,073
	E	2,470	2,470	177		2,470	2,470	34
	Total	9,150	9,150	3,294	11,920	9,150	9,150	2,542
Flatfish, Shallow Water	W	22,570	4,500	400		22,570	4,500	255
	C	19,260	12,950	7,328		19,260	12,950	2,621
	E	1,320	1,180	47		1,320	1,180	63
	Total	43,150	18,630	7,775	59,540	43,150	18,630	2,939
Flathead Sole	W	8,440	2,000	449		8,440	2,000	531
	C	15,630	5,000	1,938		15,630	5,000	1,048
	E	2,040	2,040	59		2,040	2,040	7
	Total	26,110	9,040	2,446	34,010	26,110	9,040	1,586
Arrowtooth	W	31,340	5,000	2,636		33,010	5,000	2,768
	C	142,100	25,000	12,518		149,640	25,000	8,373
	E	24,400	5,000	1,165		25,690	5,000	296
	Total	197,840	35,000	16,319	295,970	208,340	35,000	11,437
Sablefish	W	1,860	1,860	1,374		1,840	1,840	1,147
	C	6,410	6,410	6,237		6,320	6,320	4,854
	W. Yakutat	2,410	2,410	1,928		5,960	2,473	1,602
	E. Yak./SEO	3,840	3,840	3,725			3,487	2,369
	Total	14,520	14,520	13,264	23,450	14,120	14,120	9,972
Rockfish, Other Slope	W	20	20	68		20	20	44
	C	650	650	941		650	650	687
	E	4,590	1,500	208		4,590	1,500	104
	Total	5,260	2,170	1,217	7,560	5,260	2,170	835
Rockfish, Northern	W	840	840	62		840	840	65
	C	4,150	4,150	2,870		4,150	4,150	2,958
	E	10	10	15		10	10	10
	Total	5,000	5,000	2,947	9,420	5,000	5,000	3,033
Pacific Ocean Perch	W	1,840	1,472	1,832		1,810	1,810	815
	C	6,690	5,352	6,720		6,600	6,600	7,322
	E	4,460	2,366	979		4,410	2,366	606
	Total	12,990	9,190	9,531	18,090	12,820	10,776	8,743
Shortraker/Rougheye	W	160	160	137		160	160	109
	C	970	970	931		970	970	821
	E	460	460	541		460	460	528
	Total	1,590	1,590	1,609	2,740	1,590	1,590	1,456
Rockfish, Pelagic Shelf*****	W	570	570	96		620	620	59
	C	3,320	3,320	1,959		3,260	3,260	2,459
	E	950	950	406		1,000	1,000	553
	Total	4,840	4,840	2,461	8,040	4,880	4,880	4,880
Rockfish, Demersal Shelf	SEO	950	950	406	950	560	560	274
Atka Mackerel	Gulfwide	1,000	1,000	331	6,200	600	600	291
Thornyhead	W					250	250	
	C					710	710	
	E					1,040	1,040	
	Total	1,700	1,700	1,240	2,840	2,000	2,000	189
Other Species	Gulfwide	NA	13,470	5,409		NA	15,570	3,285
GULF OF ALASKA	TOTAL	492,750	282,515	230,280	817,270	548,650	327,046	187,758

*catch through September 5, 1998.

**TAC reduced by 15% GHL for W/C state fishery apportionment (25% for EGOA)

***5% trawl allowance in EY/SEO reallocated to WY, so: 90% of WY=fixed gear, 100% of EY/SEO=fixed gear

****nearshore component removed from PSR in 1998

Excerpted from ADF&G Report to NPFMC
dated October 7, 1998

STATE WATERS PACIFIC COD FISHERY

The Alaska Board of Fisheries adopted a Pacific cod management plan for State water fishery utilizing pot gear and jig gear. The Pacific cod fishery in Prince William Sound, Cook Inlet, and Kodiak opened at noon on March 17, seven days after the federal closure of the Central Gulf of Alaska. The Chignik area opened by regulation on April 1. The South Alaska Peninsula area opened on March 10, seven days after the closure of the Western Gulf of Alaska. Cook Inlet pot gear closed by regulation on April 7 and re-opened on June 15. The following catch numbers are through September 21, 1998.

Prince William Sound Pacific Cod. The fishery opened March 17, one week after the federal waters closure with a guideline harvest level of 860,000. The harvest through August 31 was 215,000 pounds. Four vessels using jig gear have made 16 landings and statistics for pot gear remain confidential.

Cook Inlet Pacific Cod. The fishery opened March 17 with a guideline harvest of 2,435,000 pounds. The pot fishery harvested 232,000 pounds prior to closure April 7. The jig fishery has harvested 177,000 pounds to date.

Kodiak Pacific Cod. The Kodiak Area cod guideline is 8.1 million pounds split equally between pot and jig gear. The fishery opened March 17 and was closed to pot fishing April 27 with a harvest of 3.9 million pounds. The jig fishery remains open along with the pot fishery which reopened September 1. The total catch through 9/21/98 is 6.0 million pounds.

Chignik Pacific Cod. The guideline harvest level is 5.7 million pounds for the Chignik Area. The fishery was open April 1 through April 23 and the harvest tallied 5.45 million pounds. The fishery was reopened to jig fishing May 20 to allow harvest of the remaining 250,000 pounds of the GHL. To date 150,000 additional pounds have been landed for a total catch of 5.6 million.

South Alaska Peninsula Cod. The fishery opened March 10 with a guideline harvest level of 9.0 million pounds. The fishery closed to pot gear April 16 with a harvest of 8.2 million pounds. The jig fishery remains open with harvest to date of 450,000 pounds.

Table 6. Summary of halibut discard mortality rates (DMRs) in the Bering Sea/Aleutian Islands (BSAI) groundfish fisheries during 1990-1997 and recommendations for Preseason Assumed DMRs to use in monitoring halibut bycatch mortality in 1998.

Gear and Target	1990	1991	1992	1993	1994	1995	1996	1997	2-Year Mean	Used in 1998	Recommendations for 1999
<i>Trawl</i>											
Atka mackerel	66	77	71	69	73	73	83	85	84	83	85
Bottom pollock	68	74	78	78	80	73	79	72	76	76	76
Pacific cod	68	64	69	67	64	71	70	67	69	71	69
Other Flatfish	80	75	76	69	61	68	67	71	69	68	69
Rockfish	65	67	69	69	75	68	72	71	72	70	72
Flathead sole	-	-	-	-	67	62	66	57	62	64	62
Other species	-	-	-	-	-	-	-	-	-	71	69
Pelagic pollock	85	82	85	85	80	79	83	87	85	81	85
Rock sole	64	79	78	76	76	73	74	77	76	74	76
Sablefish	46	66	-	26	20	-	-	-	23	23	23
Turbot	69	55	-	-	58	75	70	75	73	73	73
Yellowfin sole	83	88	83	80	81	77	76	80	78	77	78
<i>Pot</i>											
Pacific cod	12	4	12	4	10	10	7	4	6	9	4
Other species	-	-	-	-	-	-	-	-	-	9	4
<i>Longline</i>											
Pacific cod	19	23	21	17	15	14	12	11	12	11	11
Rockfish	17	55	-	6	23	-	20	4	12	22	12
Other species	-	-	-	-	-	-	-	-	-	12	11
Sablefish	14	32	14	13	38	-	-	-	-	18	-
Turbot	15	30	11	10	14	9	15	22	19	12	19

Table 7. Summary of halibut discard mortality rates (DMRs) in the Gulf of Alaska (GOA) groundfish fisheries during 1990-1997 and recommendations for Preseason Assumed DMRs to use in monitoring halibut bycatch mortality in 1999.

Gear and Target	1990	1991	1992	1993	1994	1995	1996	1997	2-Year Mean	Used in 1998	Recommendations for 1999
<i>Trawl</i>											
Atka mackerel	67	89	81	67	53	-	60	-	57	57	57
Bottom pollock	51	62	66	57	48	66	79	66	73	73	73
Pacific cod	60	62	66	59	53	64	70	62	66	67	66
Deep wtr flats	61	58	70	59	60	56	71	61	66	64	66
Shallow wtr flats	66	71	69	65	62	70	71	71	71	71	71
Rockfish	65	75	79	75	58	71	65	63	64	68	64
Flathead sole	-	-	-	-	54	64	67	74	71	67	74
Other species	-	-	-	-	-	-	-	-	-	67	66
Pelagic pollock	71	82	72	63	61	51	81	70	76	66	76
Sablefish	70	60	68	59	67	58	80	61	71	67	71
Arrowtooth fldr	-	-	-	-	-	-	66	48	57	66	57
Rex sole	-	-	-	-	56	76	63	47	55	69	55
<i>Pot</i>											
Pacific cod	12	7	16	24	17	21	7	4	6	14	6
Other species	-	-	-	-	-	-	-	-	-	14	6
<i>Longline</i>											
Pacific cod	15	18	13	7	11	13	11	22	16	12	16
Rockfish	6	-	-	7	-	4	13	-	9	9	9
Other species	-	-	-	-	-	-	-	-	-	12	16
Sablefish	17	27	28	30	22	-	-	-	-	24	-