RESOURCE ASSESSMENT DOCUMENT

FOR THE

GULF OF ALASKA GROUNDFISH FISHERY

Prepared by the Gulf of Alaska Groundfish Plan Team

August 29, 1986

STATUS OF GULF OF ALASKA GROUNDFISH STOCKS - 1986

This Plan Team report summarizes the condition of stocks in the Gulf of Alaska. The first section provides an executive summary of management recommendations for each species or species group. This is followed by a summary of the team's review of the condition of each and recommendations based on their condition.

The Plan Team (PT) for the Groundfish Management Plan (FMP) of the Gulf of Alaska met in Seattle on August 25-29, 1986 to review the status of stocks of the ten species, or species groups, which are management entities in the FMP. The PT review and dicussions were based on preliminary drafts of 1986 INPFC documents and presentations by NMFS scientists.

Definitions of ABC and FMG used by the team for these deliberations were those contained in the draft environmental assessment for amendment 15.

ABC (Allowable biological catch):

> The allowable catch is defined as zero when the stock is at or below its threshold. For biomass sizes between the threshold and the maximum sustainable yield biomass (B_{MSY}), the allowable catch is defined as the maximum sustainable yield exploitation rate multiplied times the size of the biomass for the relevant time period. The allowable biological catch is set equal to MSY, when the biomass is at or above the B_{MSY} level.

FMG (Fisheries mortality guideline):

> A tolerable fishing mortality--an upper limit placed on the sum of target fishing mortality, bycatch fishing mortality, and fishing mortality on the species from recreational, subsistence, and non-groundfish fisheries. In deriving this estimate, the team will consider possible rebuilding, all available estimates of the noncommercial fishery mortality, and the extent that the fishery is part of a mixed species fisheries, that is, the relation of the FMG to all other FMGs. Socioeconomic criteria may also be used. All considerations used in establishing FMG will be presented in the RAD.

The following preliminary recommendations for acceptable biological catches in 1987 are based on the PT's assessment of the current productivity of fishery resources in the Gulf of Alaska. The establishment of fishery

mortality guidelines or FMG values must also take into account the potential bycatch of fully utilized species, i.e. Pacific ocean perch complex, Atka mackerel, sablefish, and the distribution of the halibut PSC cap to the various fishing fleets. It should be noted that the FMGs given in this RAD and listed in Table 1 are preliminary and do not consider bycatch or the socioeconomic considerations. The Council will use information concerning ABC and FMG in establishing the total allowable catch (TAC) and any prohibited species catch limits (PSC).

Attendance at the plan team meeting included:

Team Members	NMFS Scientists	WDF Scientist
S. Davis	L. Ronholt	S. Wright
R. Berg	J. Traynor	
B. Bracken	E. Nunnallee	
F. Funk	G. Thompson	
J. Fujioka	R. Harrison	
J. Terry	R. Hoff	
J. Balsiger	M. Alton	
R. Trumble	B. Megrey	

Public Attendance

S. Dickinson - Japan Deep Sea Trawlers Association
L. Daneker - Fishing Company of Alaska

1. POLLOCK - The biomass dropped to 470,000 mt in 1986, the lowest value since the hydroacoustic surveys began in 1981. The forecasting model projects an increasing trend in biomass for the next few years due primarily to a strong 1984 year class. The PT set ABC for the Central and Western Regulatory Areas in the range of 77,000 to 97,000 mt using an 14% exploitation rate on a projected biomass of 550,000 to 690,000 mt. Due to positive forecasts in biomass trends, FMG was set at the upper end of the ABC range of 97,000 mt for the Central and Western Regulatory Areas. FMG in the Eastern Regulatory Areas remains at 16,600 mt. An

Table 1.-- Current status of Gulf of Alaska groundfish resources (mt).

Species	Projected 1986 OY	Projected 1986 catch	Stock condition	Current trend in abundance	ABC	FMG 1/	TAC
Pollock	116,600	57,000	Depressed	Exploitable biomass increasing in 1987	113,600	113,600	• AP
Pacific cod	75,000	19,100	Good	Stable; ABC=MSY	125,000	125,000	AP—75,000 mt
Flounders	14,380	1,400	Good	Stable	340,000	340,000	AP- 30,000
Pacific ocean perch	3,702	550	Depressed	Stable	POP SSC- 10,500 Unknown	3,702	• AP
Sablefish	15,000	17,300	Good	Increasing; ABC=MSY	20-~~25~~-SSC 25,000	20,000	• AP
Atka mackerel	5,278	<100	Depressed	Depressed; no apparent recruitment	D-SSC Unknown, bycatch only	600	• AP
Other rockfish	5,000	850	Depressed	Unknown Gulf-wide, believed declining in SEC	Unknown SSC 2,700	2,700	• AP
Thornyhead rockfish	3,750	350	Unknown	Declining in Western & Central Areas	Unknown SSC 3750	3,750	AP
Squid	5,000	10	Appears good	Assumed stable; ABC=MSY	5,000	5,000	• AP
Other species	12,186	700	Probably good	Assumed stable	Not applicable	• AP	5% of TAC sums

1/ This mix of catches will not be attainable under a halibut PSC cap of 2,000 mt. See section on FMG and its relationship to ABC and TAC (page 8).

Table 2.-- Gulf of Alaska groundfish OY, TALFF, and Catch Statistics for 1986, reported and compiled by August 19.

Species	Area	1986 OY	Domestic Landings	JV Catch	Final TALFF	Foreign Catch	Total Catch
Pollock	W/C	100,000	4,655	52,271	140	113	57,038
	E	16,600	1	0	0	0	1
	Total	116,600	4,656	52,271	140	113	57,039
Pacific cod	W	29,951	385	3	11,640	11,574	11,961
	C	33,049	2,638	600	3,880	3,784	7,021
	E	12,000	134	0	0	0	134
	Total	75,000	3,156	603	15,520	15,357	19,117
Flounders	W	5,360	258	4	100	56	318
	C	5,000	763	217	20	15	994
	E	4,020	17	0	0	0	17
	Total	14,380	1,038	221	120	71	1,329
Pacific ocean perch	W	1,316	369	0 *	10 *	0	369
	C	1,511	54	0 *	10 *	0	54
	E	875	115	*	0 *	0	115
	Total	3,702	538	0 *	20 *	0	538
Sablefish	W	2,850	2,761	0 !	30 *	1	2,762
	C	6,150	7,810	4 !	10 *	1	7,815
	WYk	2,550	3,256	0 !	0 *	0	3,256
	EYk/SE	3,450	3,513	0 !	0 *	0	3,513
	Total	15,000	17,340	4 !	40 *	2	17,346
Atka Mackerel	W	4,678	0	TR	20	TR	0
	C	500	TR	0	10	TR	0
	E	100	0	0	0	0	0
	Total	5,278	0	0	30	0	0
Rockfish	Gulfwide	4,400	1,200	3 *	10	4	1,207
	SEC	600	181	0 *	0 *	0	181
	Total	5,000	1,381	3 *	10 *	4	1,388
Thornyhead	Gulfwide	3,750	346	TR	10	0	346
Squid	Gulfwide	5,000	0	7	10	1	8
Other Species	Gulfwide	12,186	323	210	146	5,862	6,395
Subtotal	W/C	100,000	4,655	52,271	140	113	57,038
	W	44,155	3,773	7	11,790	11,630	15,410
	C	46,210	11,264	821	3,920	3,800	15,884
	E	39,595	7,036	0	0	0	7,036
GULF OF ALASKA	TOTAL	255,896	28,777	53,318	16,026	21,410	103,505

Footnote: * = Prohibited species catches
! = Counted against DAP

economic report expected in October, 1986, will address alternative harvest schedules appropriate for the immature 3-year-olds expected to comprise a large part of the Shelikof Strait biomass in 1987.

2. PACIFIC COD - The Pacific cod stock is in good condition and stable. The ABC is set at the estimated MSY value of 125,000 mt. Since the full harvest of the ABC would likely exceed the halibut PSC cap, FMG will be lower than ABC. A harvest of 89,000 mt would incidentally catch all of the 2,000 mt halibut cap. As FMG's are established for other groundfish species which catch halibut incidentally, the Pacific cod FMG must be reduced. The ABC distribution by Regulatory Area is 38,000 mt in Western, 77,000 mt in Central and 10,000 mt in the Eastern Area.

3. FLATFISH - ABC for the flatfish group is derived by summing the minimum nominal ABC or MSY over all species. The ABC of 340,000 mt is apportioned: 54,400 mt to the Western Area, 244,800 mt to the Central Area, and 40,800 mt to the Eastern Area. An upper harvest may be limited at 42,763 mt because a halibut mortality cap of 2,000 mt would be taken in a directed flatfish harvest of this amount. However, as FMG's are established for other groundfish fisheries which catch halibut incidentally, the flounder FMG must be reduced.

4. PACIFIC OCEAN PERCH - The PT considers the stock depressed. Due to extreme uncertainty with the 1984 biomass estimate, an ABC could not be determined. The PT recommends that should the Council wish to continue its rebuilding program for this species category, that for discussion purposes the 1987 FMG be set at 1986 quota levels, or 3,702 mt.

5. SABLEFISH - The PT considers ABC to be 25,000 mt, the point estimate of MSY from past general production models. Because of uncertainty in the biological assessments the PT recommends against a rapid increase to the MSY estimate and thus recommends a FMG set at 20,000 mt which will allow for a 15% increase in catch. The PT recommends at this time that the apportionment of FMG to regulatory area not vary drastically from the distribution of biomass to regulatory area and gives estimates of the distribution at depth ranges 200-1,000 m and 400-1,000 m.

6. ATKA MACKEREL - Atka mackerel in the Gulf of Alaska continues to decline. Past estimates of yield were probably overly optimistic and lack of recruitment (year class failures) for several years have contributed to the decline. The PT recommends FMG should be set to allow only for bycatches in other fisheries. The FMG is 600 mt: 250 mt in the Western, 250 mt in the Central and 100 mt in the Eastern Regulatory Areas.

7. OTHER ROCKFISH - The PT estiamtes an FMG at 2,700 mt or 600 mt for the Southern Central District and 2,100 mt for the remaining gulf. No estimate of ABC was available. Because of the extreme longevity of many rockfish species and the decline of catches in some areas, sustained yield is assumed to be low.

8. THORNYHEAD ROCKFISH - The PT was unable to detrmine an ABC for this species. Relative abundance has declined 53% since 1980. The PT recommends setting FMG at the current 3,750 mt level which will keep the exploitation rate below 5%.

9. SQUID - The ABC for this species is set equal to MSY, or 5,000 mt gulfwide. The PT had no socio-economic reason to lower the FMG from ABC.

10. OTHER SPECIES - No recommendations were made by the PT for this group. FMP procedures define the reasonable quota for this category to be set at 5% at the sum of the TACs established for the other species categories.

FISHING MORTALITY GUIDELINE AND ITS RELATIONSHIP TO ABC AND TAC

Amendment 15 to the Gulf of Alaska Groundfish Fishery Management Plan includes a management goal of accounting for all fishery related removals from a resource. A fishing mortality guideline (FMG) is established as an estimate of the total fishing mortality tolerable for each species or species group from fishing activities.

Unfortunately, reliable information on fishing mortality is currently unavailable. It is clear that fisheries are killing more fish than are landed but at present we have no way of accurately estimating this mortality. In lieu of this information, the plan team assumes that mortality equals catch. In the absence of information on mortality other than catch and socioeconomic justifications for adjusting FMG, the initial FMG will be set equal to ABC. This means that the sum of the retainable catch (TAC) and potential prohibited species catch will be compared to and should be equal to or lower than the FMG. A TAC could be set well below the FMG to control bycatch of another species.

For inseason management purposes the FMG represents a desired guideline on mortality incurred by a species or species group during the fishing year. It is not a quota. The TAC is a quota for retainable catch and the PSC limit (if one is set), is a quota on nonretainable catch. When the TAC is reached for a species, all further retention of that species will be prohibited. When the PSC limit is reached, the applicable fishery assigned the PSC limit will cease fishing. Other fisheries that contribute to fishing mortality will not necessarily be closed when the FMG is reached. Under the existing single species OY (TAC) procedure, when the TAC is reached the Regional Director must determine whether additional nonretainable bycatches are to be permitted in the other nontarget fisheries. The FMG, ABC, recent surveys, fishery

indicators, and other relevant information will be used by the Regional Director in making a decision. It should be noted that the TAC and PSC limit (if applicable), for each species or species group are intended to prevent the FMG from being exceeded.

For 1987 the plan team has calculated ABC (where possible) for every species group being managed by the plan. A new, more precise definition of ABC suggested by the SSC was used. The new definition requires relatively sound estimates of current biomass which is not available for all species. Therefore, for sablefish, the POP complex, Atka mackerel, Other rockfish, and thornyheads, biomass confidence limits and other indicators of relative abundance were used in establishing the FMGs for these species (Table 1). The team has initially set the FMG for pollock, Pacific cod, flounder, and squid, equal to ABC.

In the annual Resource Assessment Document (RAD), the plan team will determine ABC for each species or species group. The team will then consider any fishery mortality information and any socioeconomic information which may suggest a lower (or higher) harvest than ABC. If a lower (or higher) harvest is justified, the FMG will be equal to that recommended harvest level. If no rationale exists for changing the ABC, the FMG will be set equal to ABC for each species category. The SSC would follow a similar procedure in their review of the teams proposed FMG schedule.

The Council, with input from the AP and fishing industry, will first determine the TAC for each species or species group. The Council will base their TACs on domestic, joint venture, and foreign requests using ABC for biological guidance. After TAC (and any PSC limits) are set by the Council, an estimate of the total mortality that would be sustained by each species group as a result of all fisheries catching their TAC and potential prohibited

species catches could be estimated. As stated above, in the absence of information on mortality other than fish caught, catches would be used as an estimate of fishing mortality, and these values compared to the FMGs recommended by the team and SSC.

If the total mortality likely to be incurred under the Council's set of catch quotas is equal to or lower than the team's/SSC's FMG, the Council can finalize its TACs and PSC limits. If the total mortality is higher than the team's/SSC's FMG, the Council can:

1. Alter the team's/SSC's FMG based on their review of social and economic considerations; or
2. Adjust their TACs and PSC limits so that the resulting potential mortality equals an acceptable level (i.e. FMG).

In December 1985 the Council used a computer spreadsheet model which kept track of the various quotas and estimated halibut bycatch. Using the same approach, should the Council set the TAC at the FMG levels shown in Table 1, the predicted halibut mortality would be approximately 12,000 mt. Last year the Council adopted a halibut mortality ceiling of 2,000 mt Gulfwide. If the Council chooses to continue managing groundfish fisheries so as to keep halibut mortality within the 2,000-mt ceiling, it is clear that some TAC adjustment will be necessary. Setting TAC at 1986 OY levels would probably keep halibut mortality within this limit.

GULF OF ALASKA GROUNDFISH 1987 ABCs, ITQs, DAPs, JVPs TALFF, and PSCs (MT)

Species	Area	ABC	ITQ	RESERVE 20% TQ	DAP	JVP	TALFF
Pollock	W/C	97,000	97,000	19,400	22,000	52,272	3,328
	Out.Shel.	n/a	50,000	10,000	0	40,000	0
	E	16,600	16,600	3,320	1	0	0
	Total	113,600	163,600	32,720	22,001	92,272	3,328
Pacific Cod	W	33,750	29,951	5,990	500	3	23,458
	C	70,000	33,049	6,610	9,300	601	16,538
	E	21,250	12,000	2,400	266	0	0
	Total	125,000	75,000	15,000	10,066	604	39,996
Flounders	W	54,400	6,900	1,380	300	4	5,216
	C	244,800	22,500	4,500	2,900	217	14,883
	E	40,800	600	120	17	0	0
	Total	340,000	30,000	6,000	3,217	221	20,099
Pacific ocean perch	W	1,316	1,316	0	1,316	0	0
	C	1,511	1,511	0	1,511	0	0
	E	875	875	0	875	0	0
	Total	3,702	3,702	0	3,702	0	0
Sablefish	W	3,800	3,800	0	3,800	0	0
	C	8,200	8,200	0	8,200	0	0
	W. Yakutat	3,400	3,400	0	3,400	0	0
	E. Yakutat S.E.Outsid	4,600	4,600	0	4,600	0	0
	Total	20,000	20,000	0	20,000	0	0
Atka Mackerel	W	250	250	50	100	100	0
	C	250	250	50	100	100	0
	E	100	100	20	40	40	0
	Total	600	600	120	240	240	0
Rockfish	S.E.Central Outside	600	600	0	600	0	0
	Remaining	2,100	2,100	0	2,100	0	0
	Total	2,700	2,700	0	2,700	0	0
Thornyhead	GW	3,750	3,750	750	1,500	1,500	0
Squid	GW	5,000	5,000	1,000	2,000	2,000	0
Other Species	GW	n/a	15,218	3,044	6,087	6,087	0
TOTAL			319,570	58,634	71,513	102,924	63,423

TABLE D-2(c)(1). PRELIMINARY 1987 DAP AND JVP APPORTIONMENTS FOR GULF OF ALASKA GROUNDFISH (ALL IN METRIC TONS).

Species	Area	1986 DAP	1986 DAP Catch 2/	NMFS DAP Projection 3/	Initial 1987 DAP	1986 JVP	1986 JVP Catch 2/	Initial 1987 JVP
Pollock	W/C	40,000	4,840	22,000	_____	58,000	52,272	_____
	E	16,600	43	*****	_____	0	0	_____
Pacific cod	W	9,800	386	500	_____	2,521	3	_____
	C	19,600	2,881	9,300	_____	2,959	601	_____
	E	12,000	266	*****	_____	0	0	_____
Flounder	W	3,252	269	300	_____	1,036	4	_____
	C	2,916	763	2,900	_____	2,084	217	_____
	E	4,020	17	*****	_____	0	0	_____
Pacific ocean perch 1/	W	1,316	500	*****	_____	0	0	_____
	C	1,511	132	*****	_____	0	1	_____
	E	875	369	*****	_____	0	0	_____
Sablefish	W	2,850	2,858	*****	_____	0	0	_____
	C	6,150	7,890	*****	_____	0	4	_____
	W.Yak.	2,550	3,637	*****	_____	0	0	_____
	S.E./E.Yak.	3,450	3,594	*****	_____	0	0	_____
Atka mackerel	W	0	0	*****	_____	3,742	1	_____
	C	0	0	*****	_____	0	0	_____
	E	0	0	*****	_____	0	0	_____
Rockfish 1/	SE Central	600	181	*****	_____	0	3	_____
	Remaining Gulf	4,400	1,200	*****	_____	0	0	_____
Thornyhead	GW	1,500	421	*****	_____	1,500	1	_____
Squid	GW	2,000	0	*****	_____	2,000	7	_____
Other species	GW	5,862	323	*****		5,862	210	
GULF OF ALASKA TOTAL		141,252	30,570	35,000		79,704	53,324	

NOTES:
1. POP refers to the POP complex, and the other rockfish species comprise "Rockfish".
2. Figures from PacFIN, September 16, 1986.
3. Projected catches from Janet Smoker, NMFS AK Region Sept. 1986.