

NPAFC DOCUMENT	
Ser. No.	164
Rev. No.	1

**Summary Report on the Status of Groundfish Resources
off the Coast of California-Oregon-Washington in 1995**

by

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Submitted to the

NORTH PACIFIC ANADROMOUS FISH COMMISSION

by the

United States Party

THIS PAPER MAY BE CITED IN THE FOLLOWING MANNER:

Methot, R.D. 1995. Summary report on the status of groundfish resources off the Coast of California-Oregon-Washington in 1995. NW Fish. Sci. Ctr., Natl. Marine Fish. Serv., 2725 Montlake Blvd. E., Seattle, Wa 98112.

Summary Report on the Status of Groundfish Resources off the Coast of California-Oregon-Washington in 1995

The level of Acceptable Biological Catch (ABC) for each major species of west coast groundfish is generally set on the basis of a quantitative stock assessment. Assessments for 19 species have been conducted since 1988. The assessment for Pacific whiting is updated annually and other assessments are updated approximately every three years. Significant events in 1995 include the conduct of an external review of the assessments for sablefish, Dover sole, and thornyheads; updated assessments for Pacific whiting, Dover sole, and Pacific ocean perch; completion of the seventh triennial resource assessment survey; and creation of a new research division in the Northwest Fisheries Science Center to augment research on west coast groundfish. Results of the external review highlight the large uncertainty in the stock assessments for these deepwater species. When results of the 1995 survey are available, an interim assessment of Pacific whiting will be conducted in time for setting the ABC in 1996; assessments for many of the continental shelf rockfish will be revised in 1996 to include data from this new survey. Levels of recent landed catch and recommended ABC for 1996 are documented in Tables 1 and 24 excerpted from the Pacific Fishery Management Council's Stock Assessment and Fishery Evaluation document (September 1995). The following overview is based upon *Our Living Oceans: Report on U.S. Living Marine Resources in 1995* (in press).

The west coast groundfish fisheries are generally managed with a constant proportional rate of harvest such that the expected level of egg production (or spawning biomass) per recruit will be 35% of the unfished level. The exception is Pacific whiting which has a more conservative and varying harvest rate in recognition of the extreme natural fluctuations in recruitment. Because many groundfish species have longevity in the 40-100 year range, the annual exploitation rates that achieve the spawning biomass per recruit goal are often as low as 5-10%. Thus, it has taken many years for these low exploitation rates to reduce the stock abundance from the lightly exploited levels of the 1960s to the fully exploited levels of today. Reductions in recommended annual harvest amounts over the past decade for sablefish, widow rockfish and some other species has been a direct result of this "fishing down" of the surplus biomass. In no case has the fishing down been smoothly along a constant rate of exploitation. Rather, imprecise stock assessments, insufficient staff to revise assessments frequently, and natural fluctuations in abundance contribute to changes in recommended harvest levels.

The groundfish stocks are generally fully utilized, although a few species such as shortbelly rockfish and jack mackerel remain essentially unutilized because of lack of market. Pacific whiting is fully utilized, but its abundance has been on a decline because of lack of strong recruitment since the 1984 yearclass. The four species in the deepwater fishery are near full utilization. Within this set, sablefish abundance and recent average yield appear near long-term potential levels, Dover sole abundance appears to have declined below target levels because of low recruitment in southern areas and because of high exploitation during the mid-1980s off Oregon. The abundance of shortspine thornyheads appears to be below its target level, and the deeper living, smaller bodied longspine thornyhead has not yet been fished down to its target level. However, the assessments for all four of these species have considerable uncertainty, and the sablefish assessment has been subject to a high level of scrutiny and criticism from the fishing industry. Within the set of rockfish, widow rockfish is relatively stable near its target level of abundance and yield. Off California, chilipepper rockfish have had a large recent increase in recruitment, while bocaccio continue to decline with reduced recruitment since the 1977 yearclass. Off Oregon and Washington, canary rockfish has declined substantially in recent years due partly to overharvest resulting from imprecise stock assessment

information. A reduced harvest guideline and new vessel limits were established for canary rockfish in 1995. In that same area, yellowtail rockfish appears healthy and at a high level of abundance due to recent high recruitment. Pacific ocean perch appears to be only slowly rebounding from overharvest that occurred in the 1960s. The current level of catch, intended as bycatch in other groundfish fisheries, is near the overfishing level of exploitation. Black rockfish, an important recreational species off Oregon and Washington, appears fully utilized and probably is near its target level of abundance. However, the precision of all these rockfish assessments appears low given the amount of available information. For other species of rockfish, no estimates of abundance and exploitation rates are available. A first time assessment for lingcod in the northern area indicates that harvest over the past decade has bordered on overfishing, so in 1995 reduced harvest guidelines and new vessel limits were imposed. Among the other flatfish species, English sole appears to be at a high level of abundance due to large recent recruitments, and Petrale sole is near its target level of abundance and yield.

TABLE 1. Estimated commercial groundfish landings (mt) for all management areas, 1986-1994.^{a/} (Excludes joint venture and foreign catches.)

Species	All Areas								
	1986	1987	1988	1989	1990	1991	1992	1993	1994 ^{b/}
Roundfish									
Lingcod	1,882	2,585	2,628	3,447	2,929	3,182	1,920	2,203	1,890
Pacific Cod	333	2,270	3,332	2,184	1,065	1,796	1,779	1,367	866
Pacific Whiting ^{c/}	3,462	4,768	6,876	7,418	12,825	204,323	198,856	137,916	232,522
Sablefish	13,144	12,794	10,789	10,255	8,996	9,470	9,298	8,121	7,545
Total Roundfish	18,821	22,417	23,625	23,304	25,815	218,771	211,853	149,606	242,823
Rockfish									
Pacific Ocean Perch	1,431	1,010	803	1,456	984	1,420	1,078	1,297	975
Shortbelly	2	0	0	2	0	4	53	7	50
Widow	9,358	12,231	10,887	12,722	10,554	6,524	6,063	7,746	6,198
Thornyheads	3,638	3,739	5,592	7,925	10,118	6,374	8,606	9,104	7,892
Other Rockfish									
Bocaccio	1,033	1,264	1,307	868	689	1,723	1,789	1,886	1,025
Canary	1,910	2,751	1,699	2,230	1,334	2,847	2,802	2,673	1,049
Chilipepper	669	971	1,194	724	732	1,962	1,425	1,434	1,382
Yellowtail	3,970	3,950	4,652	4,217	4,251	3,614	5,962	4,598	4,961
Remaining Rockfish ^{d/}	4,232	5,446	9,889	4,593	2,983	4,876	4,444	5,036	5,036
Unspecified Rockfish	10,686	9,008	4,571	9,140	11,557	6,258	4,581	4,464	2,766
Total Rockfish	36,929	40,370	40,594	43,877	43,202	35,602	36,803	38,246	31,334
Flatfish									
Arrowtooth Flounder	0	0	0	0	5,824	4,945	3,573	2,713	3,251
Dover Sole	17,286	18,442	18,002	18,797	15,693	18,223	16,014	14,323	9,300
English Sole	2,029	2,472	2,094	2,396	1,913	2,185	1,615	1,602	1,098
Petrale Sole	1,732	2,204	2,131	2,135	1,765	1,927	1,550	1,503	1,360
Other Flatfish ^{e/}	3,279	2,916	2,711	6,513	2,503	3,236	2,006	1,925	2,326
Total Flatfish	24,326	26,034	24,938	29,841	27,698	30,516	24,758	22,066	17,335
Other Fish									
Jack Mackerel	2,646	3,502	2,499	694	906	1,433	1,713	2,390	2,536
Others	2,646	3,502	2,564	694	906	1,572	2,238	2,667	2,737
Total Other Fish	0	0	65	0	0	139	525	277	201
GRAND TOTAL	82,722	92,323	91,721	97,716	97,621	286,461	275,652	212,585	294,229

Data Source: Data for 1986-1993 were extracted from PacFIN December 19, 1994 with log-adjusted WDFW trawl landings and updated WDFW rockfish species composition. Data for 1994 were extracted from PacFIN on March 15, 1995. Data on this table represent the sum of landings reported on Tables 2-6, except as noted in footnote b/.

- a/ The data in Tables 1 through 6 are preliminary. There are minor discrepancies in landings due to deficiencies in data supplied by the three states, difficulties in determining where actual catches were made when the port of landing was in another catch reporting area, adjustments made on the basis of logbook information, inaccuracies in estimates of rockfish species composition, and other factors. Minor corrections may be necessary each year.
- b/ Totals include landings from unknown INPFC areas.
- c/ Whiting landings in 1991 and later do not include discards by the at-sea fleet.
- d/ Remaining rockfish are all species of rockfish not specifically listed on this page.
- e/ Arrowtooth flounder landings are included with "Other Flatfish". Prior to 1989, arrowtooth flounder landings were recorded under "Other Fish".

TABLE 24. Final GMT recommendations for 1996 ABCs and harvest guidelines for the Washington, Oregon and California region by management areas (in thousands of mt). Page 1 of 2.

Species	Acceptable Biological Catch					Total	Preliminary 1996 Harvest Guideline
	Vancouver ^{1/}	Columbia	Eureka	Monterey	Conception		
Roundfish							
Lingcod	1.3		0.3	.7 3/	0.1	2.4	2.4 ^{2/}
Pacific Cod	-	-	-	-	-	3.2	
Whiting	-	-	-	-	-	Reserved ^{4/} (223.0)	Reserved
Sablefish		8.7			.425	9.1 ^{5/}	7.8
Jack Mackerel ^{6/}	-	-	-	-	-	52.6	52.6
Rockfish							
Pacific Ocean	0.0	0.0		c/		0.0	0-1.3 ^{7/}
Perch							
Shortbelly ^{3/}	-	-	-	-	-	23.5	23.5
Widow ^{i/}	-	-	-	-	-	7.7	6.5 ^{9/}
Sebastes Complex							
Northern area ^{10/}	-	-				11.9	11.8
Southern area ^{11/}						13.2	13.2
Bocaccio	c/			1.7 ^{12/}		1.7	1.7
Canary	1.0		0.25		c/	1.25	.85 ^{13/}
Chilipepper	c/			4.0		4.0	
Yellowtail ^{14/}	1.19	2.97	2.58		c/	6.74	3.59, 2.58
Remaining Rockfish	0.8	3.7		7.0		11.5	
Thornyheads							
Shortspine	-	-	-	-	-	8.0	
Longspine	-	-	-	-	-	1.0	1.5 ^{15/}
						7.0	7.0 ^{o/}
Flatfish							
Dover Sole	.82- 1.57 ^{p/}	3.0	2.9	3.16- 4.36 ^{16/}	1.0	10.88-12.83	11.05 ^{17/} 2.85
English Sole	2.0			1.1		3.1	
Petrale Sole	1.2		0.5	0.8	0.2	2.7	
Arrowtooth ^{h/}	-	-	-	-	-	5.8	
Other flatfish	0.7	3.0	1.7	1.8	0.5	7.7	
Other Fish ^{18/}	2.5	7.0	1.2	2.0	2.0	14.7	

TABLE 24. (continued) Final GMT recommendations for 1996 ABCs and harvest guidelines for the Washington, Oregon and California region by management areas (in thousands of mt). Page 2 of 2.

- a/ U.S. portion.
- b/ The lingcod assessment is for the entire Vancouver area, including Canada, and the Columbia area north of Cape Falcon. The preliminary 1996 U.S. ABC is based on 50 percent of the ABC for this assessment area plus 400 mt for the Columbia area south of Cape Falcon. The 1996 harvest guideline equals the sum of the ABCs and includes recreational harvest of 900 mt. Commercial gers will be allocated 1,500 mt.
- c/ These species are not common nor important in the areas footnoted. Accordingly, for convenience, Pacific cod is included in the "Other Fish" category for the areas footnoted and rockfish species are included in the "Remaining Rockfish" category for the areas footnoted only.
- d/ The whiting ABC and harvest guideline are reserved pending results of 1995 NMFS survey. A preliminary harvest guideline for treaty Indian fisheries is 0-25,000 mt.
- e/ The 1996 sablefish ABC includes 900 mt of estimated trawl discard, which was subtracted along with the Conception area ABC to obtain the harvest guideline. The harvest guideline applies to all areas except Conception; the ABC for that area is 425 mt.
- f/ The jack mackerel harvest guideline includes all areas north of 39°N latitude, and includes the area beyond the EEZ (200nm).
- g/ The Pacific ocean perch harvest guideline applies to the Vancouver and Columbia areas combined. The Council's preliminary recommendation was a range of 0 - 1,300 mt; the upper end is the same as in 1995 and would be intended to allow landing of incidental and small directed catches, and includes an assumed discard factor of 16 percent.
- h/ The shortbelly rockfish ABC and harvest guideline are the total for all areas.
- i/ The widow rockfish ABC includes a 16 percent discard factor which is included in the ABC and subtracted out to obtain the harvest guideline.
- j/ The GMT's Sebastes north harvest guideline of 11,180 mt, which applies to the Vancouver and Columbia areas, is established by summing the ABCs (except for canary rockfish, where the harvest guideline is used) in those areas: canary (850 mt), yellowtail (6,740 minus 300 mt minus 570 mt discard due to restrictive trip limits) and remaining rockfish (4,500 mt). The 300 mt subtracted from the yellowtail rockfish harvest guideline applies to the Eureka area. All discard is counted toward the harvest guideline.
- k/ The Sebastes south harvest guideline recommended by the GMT (13,200 mt) applies to the Eureka, Monterey and Conception areas and equals the sum of the ABCs in those areas (except for bocaccio, where the harvest guidelines range is used: bocaccio (1,700 mt), canary (250 mt), chilipepper (4,000 mt), yellowtail in the eureka area (300 mt) and remaining rockfish (7,000 mt). Recreational catch of bocaccio (200 mt) will be subtracted to determine the commercial harvest guideline. All discard is counted toward the harvest guideline. If the Council sets the bocaccio harvest guideline at 1,000 mt, 700 mt will be subtracted from the Sebastes south harvest guideline.
- l/ For bocaccio no discard factor is deducted because few trips were impacted by the limits in recent years. Anticipated recreational harvest (200 mt) will be subtracted before determining open access and limited entry allocations.
- m/ The 1996 canary rockfish ABC for the Vancouver and Columbia areas combined (1,000 mt) is the same as in 1995. The 850 mt harvest guideline reflects a 150 mt reduction for anticipated discard.
- n/ The 1993 yellowtail rockfish assessment addressed three separate areas: Vancouver, Columbia north of Cape Falcon, and Columbia south of Cape Falcon plus Eureka. For this table, the Columbia ABC applies to north Columbia only, and the Eureka ABC applies to Eureka plus south Columbia. The total 1996 yellowtail rockfish ABC is divided into two harvest guidelines: 4,590 mt for Vancouver plus Columbia north of Cape Lookout (close to Cape Falcon), and 2,580 mt for Eureka plus Columbia south of Cape Lookout. Separate harvest guidelines are established for the Sebastes complex north and south of the Eureka-Columbia border. Therefore, 300 mt of the yellowtail rockfish southern harvest guideline is included in the southern Sebastes complex harvest guideline and the remainder of the yellowtail rockfish southern harvest guideline is included in the northern Sebastes harvest guideline. 570 mt of anticipated discard is deducted in setting the northern harvest guideline.
- o/ The ABCs and harvest guidelines for the 2 thornyhead species are coastwide north of Pt. Conception. The Council's preliminary 1996 harvest guideline for each species was a range from its ABC to its 1995 harvest guideline. The GMT recommended maintaining the 1995 harvest guidelines. A discard factor will be added to landings inseason, depending on what trip limits are adopted.
- p/ The Council's preliminary Vancouver ABC was a range from the GMT's preliminary ABC (800 mt) up to the 1995 ABC (2,400 mt). The 1990-1994 average landing level is within this range. In the Monterey area, the lower end of the Council's preliminary ABC range (3,000 mt) is the 1990-1994 average landing level. The GMT's final recommendation is to use the current assessment in conjunction with recent (1991-1994) average catch. Thus, the Monterey ABC is 3,164 mt-4,363 mt; Vancouver is 818 mt-1,565 mt; and coastwide is 10,882 mt-12,828 mt. The GMT's harvest guideline recommendation is 2,850 mt for the Columbia area; the coastwide harvest guideline uses the upper end of the Vancouver ABC and the lower end of the Monterey ABC, combined with the other ABCs and with 5 percent deducted for discard.
- q/ The Council's preliminary coastwide Dover sole harvest guideline (10,200-13,600 mt) is the sum of the ABCs minus 5 percent for assumed discard. The GMT's final recommendation is 10,882 mt-12,828 mt, which includes a 5 percent discard inflation. The coastwide harvest guideline of 11,050 mt is 5 percent below the sum of the area ABCs. The Columbia area harvest guideline (2,850 mt) is the same as in 1995 and also reflects a 5 percent discard deduction.
- r/ Includes sharks, skates, rays, ratfish, morids, grenadiers and other groundfish species noted above in c/.