

2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

There are two suites of alternatives analyzed in this EIS. The first suite of alternatives is the range of 2007-2008 harvest specifications or acceptable biological catches (ABCs) and optimum yields (OYs) considered for groundfish stocks and stock complexes managed under the Groundfish FMP. The range of harvest specifications for depleted groundfish species is also analyzed to understand the potential conservation and socioeconomic consequences of alternative depleted species' rebuilding plans. Therefore, the Council's preferred 2007-2008 OY alternative serves two purposes: both as the harvest specifications for the years 2007 and 2008 and, for depleted species, as the next step in the longer term mortality schedules for rebuilding plans. The target rebuilding year for each depleted species under rebuilding is also set in this decision step as the most likely year to rebuild under the Council-preferred OY and mortality schedule. Harvest specification (and rebuilding plan) alternatives are described in section 2.1.

The second suite of alternatives analyzed in this EIS is alternative 2007-2008 management measures. Alternative management measures adopted for analysis are designed to illustrate the potential efficacy and tradeoffs of management strategies and allocations considered for the next biennial management period by the Council. The overarching objectives of 2007-2008 management measures are to stay within the Council-preferred annual OYs for groundfish stocks and stock complexes and to equitably allocate fishing opportunities and other fishery benefits across fishing sectors and regions under Council jurisdiction. Alternative 2007-2008 management measures are described in section 2.2.

2.1 Alternative Harvest Specifications

Table 2-1 depicts the alternative harvest specifications for groundfish stocks and stock complexes managed under the FMP and considered by the Council for the 2007-2008 management period. The Council decided to average projected 2007 and 2008 OYs from adopted assessments and rebuilding analyses with the intent to specify an average OY, which is applied to both years. In cases where the OY might exceed a year-specific ABC in any one year, the OY is capped at that ABC since an ABC cannot be legally exceeded.

2.1.1 Depleted Groundfish Species

Depleted groundfish species are those with spawning biomasses that have dropped below the Council's depletion or overfished threshold of 25% of initial spawning biomass (or $B_{25\%}$). The Groundfish FMP mandates these stocks need to be rebuilt through harvest restrictions and other conservation measures to 40% of unfished biomass (or $B_{40\%}$). Furthermore, the MSA mandates these rebuilding periods need to be the shortest time possible while taking into account the status and biology of the depleted stock, the needs of fishing communities, and the interaction of the depleted stock within the marine ecosystem. This mandate was underscored in an August 2005 ruling by the Ninth Circuit Court of Appeals in a challenge to the Council's darkblotched rockfish rebuilding plan. In accordance with that ruling, the Council decided to reconsider all adopted rebuilding plans to ensure they comply with the MSA as interpreted by the courts. Therefore, the range of harvest specifications for depleted groundfish species under rebuilding and analyzed in this EIS has been expanded to more effectively analyze the tradeoffs between the conservation objective to "rebuild in the shortest time possible" and the socioeconomic objective of allowing fisheries some access to healthy fish stocks by allowing some mortality of depleted species that are caught as bycatch in these fisheries. Any harvest of depleted groundfish stocks is anticipated to be unavoidable bycatch. The Council-preferred harvest specifications for depleted

species are the mortality limits for these species the Council recommends under rebuilding to avoid disastrous short-term socioeconomic impacts to West Coast fishing communities. Rebuilding periods

Table 2-1. Council-adopted alternatives for acceptable biological catches (ABCs) and total catch optimum yields (OYs) (mt) for 2007 and 2008. (Overfished stocks in CAPS; Stocks with new assessments in bold).

Stock	No Action Alternative				2007 and 2008 Action Alternatives a/												
	2005 ABC	2005 OY	2006 ABC	2006 OY	Alt 1 2007 ABC	Alt 2 2007 ABC	Alt 1 2008 ABC	Alt 2 2008 ABC	Alt 1 OY	Alt 2 OY	Alt 3 OY	Alt 4 OY	Alt 5 OY	Alt 6 OY	Council 2007 ABC b/	Council 2008 ABC b/	Council OY b/
Lingcod - coastwide a/	2,922	2,414	2,716	2,414	6,706		5,853		6,280	6,088					6,706	5,853	
Columbia and US-Vanc. areas		1,694		1,694					5,428	5,428							
Eureka, Monterey, and Conception areas		719		719					852	660							
N. of 42 (OR & WA)		1,801		1,801					5,558	5,558							
S. of 42 (CA)		612		612					722	530							
Pacific Cod	3,200	1,600	3,200	1,600	3,200		3,200		1,600						3,200	3,200	1,600
Pacific Whiting (U.S.)	269,545	269,069	488,850	269,069	188,682	350,409	188,682	350,409	188,348	349,790					To be determined in March 2007		
Sablefish (Coastwide)	8,368	7,761	8,175	7,634	6,210		6,058		4,574	5,934					6,210	6,058	5,934
N. of 36 (Monterey north)		7,486		7,363					4,411	5,723							5,723
S. of 36 (Conception area)		275		271					162	210							210
PACIFIC OCEAN PERCH	966	447	934	447	900		911		0	87	405	514	749		900	911	405
Shortbelly Rockfish	13,900	13,900	13,900	13,900	13,900		13,900		13,900						13,900	13,900	13,900
WIDOW ROCKFISH	3,218	285	3,059	289	5,334		5,144		0	329	456	917	1,369		5,334	5,144	456
CANARY ROCKFISH d/	270	47	279	47	172		179		0	24	44	68			172	179	44
Chilipepper Rockfish	2,700	2,000	2,700	2,000	2,700		2,700		2,000	2,700					2,700	2,700	
BOCACCIO	566	307	549	309	602		618		0	149	218	315	424		602	618	
Splitnose Rockfish	615	461	615	461	615		615		461						615	615	461
Yellowtail Rockfish	3,896	3,896	3,681	3,681	4,585		4,510		4,548						4,585	4,510	
Shortspine Thornyhead - coastwide					2,488		2,463		1,661	2,476					2,488	2,463	
Shortspine Thornyhead - N. of 34deg27'	1,055	999	1,077	1,018					1,240	1,634							
Shortspine Thornyhead - S. of 34deg27'									421	841							
Longspine Thornyhead - coastwide	2,851	2,656	2,851	2,656	3,953		3,860		2,696	3,930					3,953	3,860	
Longspine Thornyhead - N. of 34deg27' e/		2,461		2,461					2,220	2,989							
Longspine Thornyhead - S. of 34deg27' e/		195		195					476	941							
COWCOD - S. of 36 (Conception area)	5	2.1	5	2.1	17		17		0	4	7	9	11		17	17	
COWCOD - Monterey area	19	2.1	19	2.1	19		19		0	4	7	9	11		19	19	
DARKBLOTCHED	269	269	294	200	456		487		0	130	229	330	472		456	487	
YELLOWEYE	54	26	55	27	47		47		0	12	17	21	24	27	47	47	
Nearshore Species																	
Black Rockfish (WA)	540	540	540	540	540		540		540						540	540	540
Black Rockfish (OR-CA)	753	753	736	736	725		719		722						725	719	
Minor Rockfish North	3,680	2,250	3,680	2,250	3,680				2,250	2,270	2,290				3,680		
Nearshore Species		122		122					122	142	162						
Shelf Species		968		968			968		968	968	968						
Slope Species		1,160		1,160			1,160		1,160	1,160	1,160						
Remaining Rockfish North	1,612	1,216	1,612	1,216	1,612		1,612		1,216								
Bocaccio	318	239	318	239	318		318		239								
Chilipepper - Eureka	32	32	32	32	32		32		32								
Redstripe	576	432	576	432	576		576		432								
Sharpchin	307	230	307	230	307		307		230								
Silvergrey	38	29	38	29	38		38		29								
Splitnose	242	182	242	182	242		242		182								
Yellowmouth	99	74	99	74	99		99		74								
Other Rockfish North	2,068	1,034	2,068	1,034	2,068		2,068		1,034								

TABLE 2-1. Council-adopted alternatives for acceptable biological catches (ABCs) and total catch optimum yields (OYs) (mt) for 2007 and 2008 (continued). (Overfished stocks in CAPS; Stocks with new assessments in bold).

Stock	No Action Alternative				2007 and 2008 Action Alternatives a/												
	2005 ABC	2005 OY	2006 ABC	2006 OY	Alt 1 2007 ABC	Alt 2 2007 ABC	Alt 1 2008 ABC	Alt 2 2008 ABC	Alt 1 OY	Alt 2 OY	Alt 3 OY	Alt 4 OY	Alt 5 OY	Alt 6 OY	Council 2007 ABC b/	Council 2008 ABC b/	Council OY b/
Minor Rockfish South	3,412	1,968	3,412	1,968	3,403		3,403		1,753	1,855	1,898	2,006			3,403		
Nearshore Species		615		615					413	515	558	666					
Shelf Species		714		714					714	714	714	714					714
Slope Species		639		639					626	626	626	626					626
Remaining Rockfish South	854	689	854	689	854		854		689								
Bank	350	263	350	263	350		350		263								
Blackgill	343	305	343	305	292		292		292								
Gopher	97	48.5	97	48.5	302		302		49	151	227	302					
Sharpchin	45	34	45	34	45		45		34								
Yellowtail	116	87	116	87	116		116		87								
Other Rockfish South	2,558	1,279	2,558	1,279	2,558		2,558		1,279								
California scorpionfish	Not specified - managed as part of Minor RF				137	219	137	219	137	219							
Cabezon (off CA only)	103	69	108	69	94		94		69						94	94	
Dover Sole	8,522	7,476	8,589	7,564	28,522		28,442		16,500	28,482					28,522	28,442	
English Sole	3,100	3,100	3,100	3,100	6,773		5,701		6,237						6,773	5,701	
Petrale Sole (coastwide) c/	2,762	2,762	2,762	2,762	2,917		2,919		1,921	2,499	2,883				2,917	2,919	
Columbia and US-Vanc. areas									910	1,347	1,347						
Eureka, Monterey, and Conception areas									1,012	1,152	1,536						
N of 40deg10'									1,176	1,651	1,752						
S of 40deg10'									745	848	1,131						
Arrowtooth Flounder	5,800	5,800	5,800	5,800	5,800		5,800		5,800						5,800	5,800	5,800
Starry Flounder	Not specified - managed as part of Other Flatfish				1,221		1,395		890	1,186							
Other Flatfish	6,781	4,909	6,781	4,909	6,731		6,731		4,884						6,731	6,731	4,884
Other Fish	14,600	7,300	14,600	7,300	14,600		14,600		7,300						14,600	14,600	7,300
Kelp Greenling HG (OR)									No Fed HG	fed HG = state HG							

a/ The Council elected to average OY projections for 2007 and 2008 and analyze/specify the average OYs for each year. However, ABCs are year-specific.

b/ Council ABC and Council OY represent the Council's preferred harvest alternative for 2007 and 2008.

c/ Area OYs/HGs are stratified according to the assessment areas and alternatively adjusted by management areas for lingcod and petrale sole.

d/ The canary rockfish OY alternatives assume a 50:50 commercial:recreational catch share. The OY varies by the commercial:recreational catch share due to the fact that the recreational fishery takes smaller fish and therefore has a greater "per ton" imp

e/ The No Action alternative OYs for 2005 and 2006 were specified north and south of 36 deg. N latitude. The GMT recommends specifying longspine thornyhead OYs north and south of 34 deg.27' N latitude. OY apportionment may change based on further analysis

for depleted species are coincident with the Council’s recommendation for OYs for these species and defined in the Council’s rebuilding framework, as specified in the Groundfish FMP, as the median time to attain the target spawning biomass of $B_{40\%}$ under a given harvest rate or mortality schedule.

Prior to the new groundfish assessments conducted, reviewed, and adopted in 2005 under Council procedures, the depleted groundfish species under rebuilding were bocaccio (in waters south of 40°10' N latitude), canary rockfish, cowcod, darkblotched rockfish, lingcod, Pacific ocean perch, widow rockfish, and yelloweye rockfish. However, the 2005 lingcod assessment {Jagiello 2006} indicates that the coastwide lingcod stock has attained (and exceeded) the $B_{40\%}$ spawning biomass threshold and is now considered successfully rebuilt. No new species were declared depleted from the 23 groundfish assessments conducted in 2005. Therefore, the Council is continuing rebuilding plans for the other seven species only. All of these rebuilding plans are being reconsidered in response to the Ninth Circuit Court of Appeals ruling on a lawsuit challenging the darkblotched rockfish rebuilding plan. The ruling stated that West Coast groundfish rebuilding plans need to rebuild depleted stocks in as short a time as possible while taking into account the status and biology of the stock, the needs of the fishing communities, and the interaction of the overfished stock within the marine ecosystem. To fully analyze both the conservation needs of each depleted stock and the socioeconomic effects of alternative rebuilding plans, a wide range of OYs have been specified for analysis for each depleted species (Table 2-2a). Each of these OY alternatives is based on the best available science as recommended by Stock Assessment Review (STAR) panels and the Council’s Scientific and Statistical Committee (SSC). Section 2.1.1 describes the scientific basis for each depleted species’ OY alternative and describes the strategic analyses of these alternatives that are presented in more detail in subsequent chapters of this EIS.

Table 2-2a. Range of 2007-2008 OYs for depleted groundfish species decided at the November 2005 Council meeting.

Stock	Association	2007-2008 OYs (mt)					
		OY Alt. 1	OY Alt. 2	OY Alt. 3	OY Alt. 4	OY Alt. 5	OY Alt. 6
Yelloweye	Northern Shelf	0	12	17	21	24	27
Canary		0	24	44	68		
Cowcod a/ Bocaccio	Southern Shelf	0	8	14	18	22	
		0	149	218	315	424	
Darkblotched POP	Northern Slope	0	130	229	330	472	
		0	87	405	514	749	
Widow	Midwater	0	329	456	917	1,369	

a/ OY alternatives for Conception and Monterey areas combined.

The first set of analyses explores the consequences of each depleted species’ OY alternative in isolation to understand the tradeoff between the amount of allowable harvest and alternative rebuilding periods and to identify the West Coast fisheries that are affected by the constraints posed by alternative rebuilding plans for each particular depleted species. The predicted rebuilding periods and the annual OYs that describe the alternative rebuilding schedules, each of which define a rebuilding plan, are estimated using the SSC’s endorsed rebuilding program {Punt 2005}. The rebuilding program is a probabilistic population simulator that explores alternative harvest rates and predicts the total mortality and duration of rebuilding for each depleted species under a range of harvest rates. The depleted species’ OY alternatives analyzed in this EIS, based on harvest rates estimated from the rebuilding simulation program, are calculated using an instantaneous rate of fishing mortality (F), which may be converted to a Spawning Potential Ratio. For ease of comparison among stocks and to standardize the basis of rebuilding calculations, it is useful to express any specific fishing mortality rate in terms of its effect on Spawning Potential Ratio (SPR = spawning per recruit at the current population level relative to that at the stock’s unfished condition). Given fishery selectivity patterns and basic life history parameters, there is a direct inverse relationship between F and SPR (Figure 2-1). When there is no fishing, each new female recruit is expected to achieve 100% of its spawning potential. As fishing intensity increases, expected lifetime reproduction declines due to this added source of mortality. Conversion of F into the equivalent SPR has the benefit of standardizing for differences in growth, maturity, fecundity, natural mortality, and fishery selectivity

patterns and, as a consequence, the Council's SSC recommends it be used routinely. The rebuilding program is more thoroughly described in Chapter 6. The OY alternatives for depleted species are described in section 2.1.1.1.

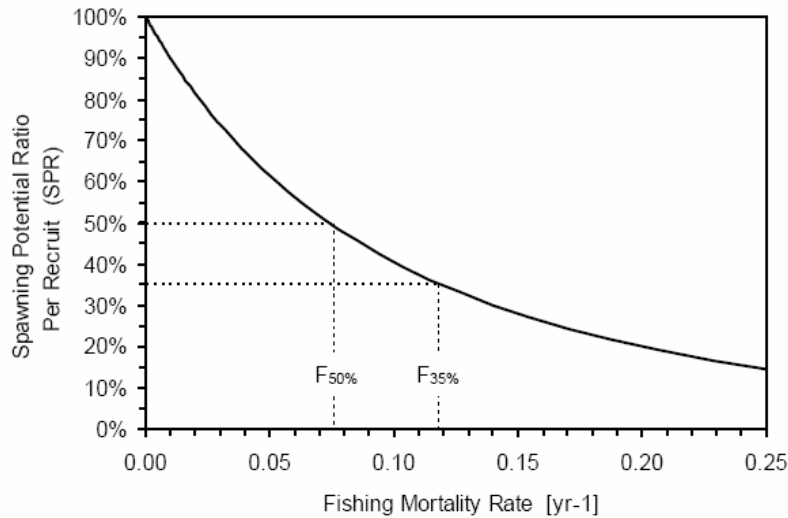


Figure 2-1. Relationship between spawning potential ratio (SPR) and instantaneous fishing mortality rate (F) for a hypothetical rockfish.

Next, rebuilding alternatives were developed by arranging the depleted species' OYs in various combinations (Table 2-2b) and then modeling changes to the current management regime to understand how rebuilding plans for different species interact to constrain fishing opportunities. The OYs in these rebuilding alternatives are strategically arrayed to illuminate how each species might differentially constrain fishing opportunities by sector (or gear type) and region along the West Coast, depending on the amount of allowable harvest of each species. It is important to note that the full range of OY alternatives described in Table 2-2a are not used to structure these rebuilding alternatives. For example, while it is important to analyze the effect of a zero harvest strategy to understand the consequences of the shortest possible rebuilding period for each of these species, it is not likely the Council and NMFS will seriously consider a zero harvest strategy due to the disastrous economic impacts to West Coast fishing communities. The Ninth Circuit Court of Appeals ruling on West Coast groundfish rebuilding plans acknowledges,

“...that Congress intended to ensure that overfished species were rebuilt as quickly as possible, but wanted to leave some leeway to avoid disastrous short-term consequences for fishing communities. To use an example relevant here, even if a fishing community is actively seeking not to fish for a certain species, it will inevitably catch some of the overfished species in the process of fishing for other, more plentiful fish — what is known as “bycatch.” Because almost no groundfish that are caught as bycatch survive even if they are thrown back into the ocean, an absolute ban on catching any of a species of groundfish could mean a total moratorium on all fishing in the parts of the fishery containing groundfish, with obvious adverse consequences for fishing communities. Section 1854(e)(4)(i), then, allows the Agency to set limited quotas that would account for the short-term needs of fishing communities (for example, to allow for some fishing of plentiful species despite the inevitability of bycatch), even though this would mean that the rebuilding period would take longer than it would under a total fishing ban.”

This indicates that the court explicitly rejected the zero harvest alternative (OY Alternative 1). Nonetheless, as mentioned above, this zero harvest level provides a useful benchmark for assessing the socioeconomic consequences of rebuilding in as short a time as possible *without* mitigating impacts to fishing communities. Furthermore, the rebuilding alternatives help to inform the Council's choice of a preferred OY alternative consistent with the court's interpretation of the MSA that “limited quotas” are

acceptable to account for the short-term needs of fishing communities. Likewise, some of the higher OY alternatives in Table 2-2a are not used to structure the rebuilding alternatives in Table 2-2b. For example, the highest OY alternative for widow rockfish (OY Alternative 5) was not included among the rebuilding alternatives because it represents an amount of bycatch not observed in the current management regime. Prior to 2003, when there was a directed midwater trawl fishery for yellowtail and widow rockfish, catches of widow rockfish approached the level of mortality consistent with the OY Alternative 5 in Table 2-2a. However, the current understanding of the association of the more constraining canary rockfish stock with yellowtail rockfish leads to the conclusion the available potential harvest of canary rockfish (as described by the range of OYs in Table 2-2a) would constrain any directed midwater trawl opportunities for yellowtail rockfish before the widow rockfish bycatch would approach the higher available OYs for that stock. Therefore, the rebuilding alternatives in Table

Table 2-2b. Amendment 16-4 rebuilding alternatives.

Stock	Association	2007-2008 OYs (mt)					
		"Status Quo" Reb.	Reb. Alt. 1	Reb. Alt. 2	Reb. Alt. 3	Reb. Alt. 4	Reb. Alt. 5
Yelloweye	Northern Shelf	27	21	17	21	12	12
Canary		44	24	44	68	24	24
Cowcod b/ Bocaccio	Southern Shelf	8	8	18	22	14	4
		149	149	218	424	315	40
Darkblotched POP	Northern Slope	229	330	229	472	472	130
		87	405	87	749	405	44
Widow	Midwater	329	456	329	917	329	120

a/ The species' OYs described in the "status quo" rebuilding alternative are determined by calculating the effective SPR harvest rate from the November 2005 bycatch scorecard and projecting this harvest rate forward to 2007.

b/ OY alternatives for Conception and Monterey areas combined.

2-2b are structured using a narrower range of depleted species' OYs than those depicted in Table 2-2a. The rebuilding alternatives are described in detail below, in Section 2.1.1.2.

At their April 2006 meeting, the Council selects a preferred OY alternative (a set of OYs for all managed species and species complexes as depicted in Table 2-1). In doing so, they will consider the full range of OY alternatives, but may also use information about the effects of the rebuilding alternatives to choose a preferred alternative that, while within the range of OY alternatives, differs from any one of them for one or more depleted species. As discussed above, the Council's preferred OY alternative for the 2007-2008 fisheries must be consistent with any intent to modify depleted species rebuilding plans. Therefore, the choice of a preferred OY alternative involves consideration of both short-term effects (during 2007-2008) and long-term effects (the future application of rebuilding plans as revised by Amendment 16-4). They also have the option to further narrow the range of OY alternatives by eliminating specific OY values from further consideration because further analysis demonstrates they are not "reasonable," such as the higher widow rockfish OYs that cannot be attained under management strictures required for co-occurring depleted species. (NEPA regulations state that an EIS must "rigorously explore and objectively evaluate all *reasonable* alternatives," 40 CFR 1502.14(a), emphasis added.)

2.1.1.1 Optimum Yield Alternatives for Depleted Species

Table 2.2a depicts the range of depleted species' OY alternatives specified for analysis by the Council in November 2005. Table 2-3 and Figure 2-2 indicate the median time to rebuild under each 2007-2008 OY alternative.

Table 2-3. Estimated time to rebuild relative to the 2007-2008 OY for depleted West Coast groundfish species.

Species	Ttarget in the FMP	OY Alternative	Median Time to Rebuild	2007-08 OY (mt)	2007 ABC (mt)	Current Tmin	Re-estimated Tmin	Current Tmax	Re-estimated Tmax
Bocaccio (S of 40deg10')	2023	1	2022	0	602	2018	2018	2032	2032
		2	2024	106					
		3	2024	149					
		4	2026	218					
		5	2029	315					
Canary	2074	1	2048	0	172	2057	2048	2076	2071
		2	2058	24					
		3	2063	44					
		4	2071	68					
Cowcod (Concep.+ Monterey Areas)	2090	1	2035	0	26	2062	2035	2095	2074
		2	2040	4.6					
		3	2043	8					
		4	2052	14					
		5	2062	18					
Darkblotched	2030	1	2009.5	0	456	2011	2009.5	2044	2033
		2	2009.9	130					
		3	2010.2	229					
		4	2010.5	330					
		5	2012	472					
POP	2026	1	2014	0	900	2014	2015	2043	2048
		2	2015	87					
		3	2021	405					
		4	2025	514					
		5	2048	749					
Widow	2038	1	2013	0	5,334	2026	2013	2042	2027
		2	2015	329					
		3	2016	456					
		4	2020	917					
		5	2027	1,369					
Yelloweye	2058	1	2036	0	47	2027	2036	2071	2080
		2	2050	12					
		3	2058	17					
		4	2068	21					
		5	2080	24					
		6	2099	27					

 = Subject to change pending new rebuilding analysis.

Bocaccio (in Waters off California South of 40°10' N Latitude)

The OY alternatives specified for analysis for the bocaccio stock south of 40°10' N latitude are 0 mt, 149 mt, 218 mt, 315 mt, and 424 mt (Tables 2-1 and 2-2a). This compares to the status quo OYs of 307 mt in 2005 and 309 mt in 2006.

The zero harvest alternative would rebuild the stock by 2018, which is the shortest possible time to rebuild (T_{MIN}) given our current understanding of stock productivity.

The 149 mt alternative is based on the effective harvest rate in 2005 projected forward to 2007 and 2008. The GMT determined the effective harvest rate by applying the best estimate of total mortality in 2005 divided by the exploitable biomass in 2005. The GMT then applied the resulting rate to the projected exploitable biomass in 2007 and 2008 {MacCall 2006a} to determine projected OYs, which were then averaged for those years. The median time to rebuild the stock under this alternative would be 2024, or 6 years longer than T_{MIN} (Table 2-3 and Figure 2-2).

The 218 mt OY alternative represents the OY under an 80% rebuilding probability (P_{MAX} or the probability of successfully rebuilding the stock in the maximum allowable time under the current National Standard 1 Guidelines) from the 2003 rebuilding analysis {MacCall 2003b}. The median time to rebuild the stock under this alternative would be 2026, or 8 years longer than T_{MIN} (Table 2-3 and Figure 2-2).

The 315 mt OY alternative represents the current SPR harvest rate of 69.2% applied to the 2007 and 2008 projections of exploitable biomass. This is the harvest rate used to establish the status quo 2005 and 2006 OYs. The median time to rebuild the stock under this alternative would be 2029, or 11 years longer than T_{MIN} (Table 2-3 and Figure 2-2).

The 424 mt OY alternative represents the OY under a re-estimated P_{MAX} of 50% from the new rebuilding analysis {MacCall 2006}. This is the highest OY that can be considered for bocaccio in that it is based on the best available science and is at the 50% rebuilding probability threshold established in litigation (*Natural Resources Defense Council v. Daley*, April 25, 2000, U.S. Court of Appeals for the District of Columbia Circuit). The median time to rebuild the stock under this alternative would be 2032, or 14 years longer than T_{MIN} (Table 2-3 and Figure 2-2).

Canary Rockfish

The OY alternatives specified for analysis for the coastwide canary rockfish stock are 0 mt, 24 mt, 44 mt, and 68 mt (Tables 2-1 and 2-2a). This compares to the status quo OY of 47 mt in 2005 and 2006.

The zero harvest alternative would rebuild the stock by 2048, which is the shortest possible time to rebuild (T_{MIN}) given our current understanding of stock productivity.

The 24 mt OY alternative represents the OY under a 60% rebuilding probability (the status quo P_{MAX}) from the new rebuilding analysis {Methot 2006}. The median time to rebuild the stock under this alternative would be 2058, or 10 years longer than T_{MIN} (Table 2-3 and Figure 2-2).

The 44 mt OY alternative applies the current SPR harvest rate of 88.7% to the 2007 and 2008 projections of exploitable biomass. This is the harvest rate used to establish the status quo 2005 and 2006 OYs. The median time to rebuild the stock under this alternative would be 2063, or 15 years longer than T_{MIN} (Table 2-3 and Figure 2-2).

The 68 mt OY alternative represents the OY under a re-estimated P_{MAX} of 50% from the new rebuilding analysis {Methot 2006}. This is the highest OY that can be considered for canary rockfish in that it is based on the best available science and is at the 50% rebuilding probability threshold. The median time to rebuild the stock under this alternative would be 2071, or 23 years longer than T_{MIN} (Table 2-3 and Figure 2-2).

Cowcod

The OY alternatives specified for analysis for the cowcod stock occurring in the Conception and Monterey INPFC areas are 0 mt, 8 mt, 14 mt, 18 mt, and 22 mt (Tables 2-1 and 2-2a). This compares to the status quo OY of 4.2 mt in 2005 and 2006.

The zero harvest alternative would rebuild the stock by 2035, which is the shortest possible time to rebuild (T_{MIN}) given our current understanding of stock productivity.

The 8 mt OY alternative represents the OY under a re-estimated 80% rebuilding probability from the new rebuilding analysis {Piner 2006}. The median time to rebuild the stock under this alternative would be 2043, or 8 years longer than T_{MIN} (Table 2-3 and Figure 2-2).

The 14 mt OY alternative represents the OY under a re-estimated 70% rebuilding probability from the new rebuilding analysis {Piner 2006}. The median time to rebuild the stock under this alternative would be 2052, or 17 years longer than T_{MIN} (Table 2-3 and Figure 2-2).

The 18 mt OY alternative represents the OY under a re-estimated 60% rebuilding probability (the status quo P_{MAX}) from the new rebuilding analysis {Piner 2006}. The median time to rebuild the stock under this alternative would be 2062, or 27 years longer than T_{MIN} (Table 2-3 and Figure 2-2).

The 22 mt OY alternative represents the OY under a re-estimated P_{MAX} of 50% from the new rebuilding analysis {Piner 2006}. This is the highest OY that can be considered for canary rockfish in that it is based on the best available science and is at the 50% rebuilding probability threshold. The median time to rebuild the stock under this alternative would be 2074, or 39 years longer than T_{MIN} (Table 2-3 and Figure 2-2).

Darkblotched Rockfish

The OY alternatives specified for analysis for the coastwide darkblotched rockfish stock are 0 mt, 130 mt, 229 mt, 330 mt, and 424 mt (Tables 2-1 and 2-2a). This compares to the status quo OYs of 269 mt in 2005 and 200 mt in 2006.

The zero harvest alternative would rebuild the stock by 2009.5, which is the shortest possible time to rebuild (T_{MIN}) given our current understanding of stock productivity.

The 130 mt OY alternative represents the OY specified in 2001. The Ninth Circuit court ruling compelling the Council and NMFS to consider Amendment 16-4 disputed the 2002 darkblotched harvest specification, which had changed this 2001 OY to a higher value. The median time to rebuild the stock under this alternative would be 2009.9, or approximately 5 months longer than T_{MIN} (Table 2-3 and Figure 2-2).

The 229 mt OY alternative is based on the effective harvest rate in 2005 ($F = 0.0216$) projected forward to 2007 and 2008. The GMT determined the effective harvest rate by applying its best estimate of total mortality in 2005 divided by the exploitable biomass in 2005. The GMT then applied the resulting harvest rate to the projected exploitable biomass in 2007 and 2008 {Rogers 2006a} to determine projected OYs, which were then averaged for those years. The median time to rebuild the stock under this alternative would be 2010.2, or approximately 8 months longer than T_{MIN} (Table 2-3 and Figure 2-2).

The 330 mt OY alternative applies the harvest rate used to set the 2005 OY ($F = 0.032$) to the 2007 and 2008 projections of exploitable biomass (OYs averaged and applied to each year). The median time to rebuild the stock under this alternative would be 2010.5, or 1 year longer than T_{MIN} (Table 2-3 and Figure 2-2).

The 472 mt OY alternative represents the OY capped at the average 2007-2008 ABC specification. This is the highest OY that can be considered for darkblotched rockfish in that the ABC cannot be legally exceeded. The re-estimated P_{MAX} under this alternative is 97%. The median time to rebuild the stock under this alternative would be 2012, or 2.5 years longer than T_{MIN} (Table 2-3 and Figure 2-2).

Pacific Ocean Perch

The OY alternatives specified for analysis for the coastwide Pacific ocean perch (POP) stock are 0 mt, 87 mt, 405 mt, 514 mt, and 749 mt (Tables 2-1 and 2-2a). This compares to the status quo OY of 447 mt in 2005 and 2006.

The zero harvest alternative would rebuild the stock by 2014, which is the shortest possible time to rebuild (T_{MIN}) given our current understanding of stock productivity.

The 87 mt OY alternative is based on the effective harvest rate in 2005 projected forward to 2007 and 2008. The GMT determined the effective harvest rate by applying its best estimate of total mortality in 2005 divided by the exploitable biomass in 2005. The GMT then applied the resulting harvest rate to the projected exploitable biomass in 2007 and 2008 {Hamel 2006b} to determine projected OYs, which were then averaged for those years. The median time to rebuild the stock under this alternative would be 2015, or 1 year longer than T_{MIN} (Table 2-3 and Figure 2-2).

The 405 mt OY alternative represents the OY under a re-estimated 80% rebuilding probability from the new rebuilding analysis {Hamel 2006b}. The estimated SPR harvest rate under this alternative is 69.6%. The median time to rebuild the stock under this alternative would be 2021, or approximately 7 years longer than T_{MIN} (Table 2-3 and Figure 2-2).

The 514 mt OY alternative represents the OY under a re-estimated 70% rebuilding probability (the status quo P_{MAX}) from the new rebuilding analysis {Hamel 2006b}. The median time to rebuild the stock under this alternative would be 2025, or 11 years longer than T_{MIN} (Table 2-3 and Figure 2-2).

The 749 mt OY alternative represents the OY under a re-estimated P_{MAX} of 50% from the new rebuilding analysis {Hamel 2006b}. This is the highest OY that can be considered for POP in that it is based on the best available science and is at the 50% rebuilding probability threshold. The median time to rebuild the stock under this alternative would be 2048, or 34 years longer than T_{MIN} (Table 2-3 and Figure 2-2).

Widow Rockfish

The OY alternatives specified for analysis for the coastwide widow rockfish stock are 0 mt, 329 mt, 456 mt, 917 mt, and 1,369 mt (Tables 2-1 and 2-2a). This compares to the status quo OYs of 285 mt in 2005 and 289 mt in 2006.

The zero harvest alternative would rebuild the stock by 2013, which is the shortest possible time to rebuild (T_{MIN}) given our current understanding of stock productivity.

The 329 mt OY alternative is based on the effective harvest rate in 2005 projected forward to 2007 and 2008. The GMT determined the effective harvest rate by applying its best estimate of total mortality in 2005 divided by the exploitable biomass in 2005. The GMT then applied the resulting harvest rate to the projected exploitable biomass in 2007 and 2008 {He et al. 2006b} to determine projected OYs, which were then averaged for those years. The median time to rebuild the stock under this alternative would be 2015, or 2 years longer than T_{MIN} (Table 2-3 and Figure 2-2).

The 456 mt OY alternative applies the current SPR harvest rate of 93.6% to the 2007 and 2008 projections of exploitable biomass. This is the harvest rate used to establish the status quo 2005 and 2006 OYs. The median time to rebuild the stock under this alternative would be 2016, or approximately 3 years longer than T_{MIN} (Table 2-3 and Figure 2-2).

The 917 mt OY alternative represents the OY under a re-estimated 80% rebuilding probability from the new rebuilding analysis {He et al. 2006b}. The SPR harvest rate under this alternative is estimated to be 88.6%. The median time to rebuild the stock under this alternative would be 2020, or 7 years longer than T_{MIN} (Table 2-3 and Figure 2-2).

The 1,369 mt OY alternative represents the OY under a re-estimated P_{MAX} of 60% from the new rebuilding analysis {He et al. 2006b}. The median time to rebuild the stock under this alternative would be 2027, or 14 years longer than T_{MIN} (Table 2-3 and Figure 2-2).

Yelloweye Rockfish

The OY alternatives specified for analysis for the coastwide yelloweye rockfish stock are 0 mt, 12 mt, 17 mt, 21 mt, 24 mt, and 27 mt (Tables 2-1 and 2-2a). This compares to the status quo OYs of 26 mt in 2005 and 27 mt in 2006.

2.1.1.2 Rebuilding Alternatives

There are six rebuilding alternatives analyzed in this EIS (Table 2-2b). Each alternative was strategically developed to better compare and contrast the tradeoffs associated with alternative rebuilding strategies. These alternatives are analyzed by predicting the effect on the status quo management regime. Multiple suboptions are presented for each alternative to explore potential effects under different allocation scenarios.

The “status quo” rebuilding alternative is comprised of OY alternatives based on the effective harvest rates for each of the depleted stocks in 2005 projected forward to 2007 and 2008. The effective harvest rates were determined by applying the GMT’s best estimate of total mortality in 2005 divided by the exploitable biomass of each stock in 2005. These harvest rates were then applied to the projected best exploitable biomasses in 2007 and 2008 to determine projected OYs.

Rebuilding alternative 1 would result in an increase in slope and midwater trawl fishing opportunities with the higher darkblotched, POP, and widow OYs; and a corresponding decrease in shelf fishing opportunities with the lower OYs for bocaccio, canary, cowcod, and yelloweye.

Rebuilding alternative 2 would result in higher southern shelf fishing opportunities with the higher bocaccio and cowcod OYs; lower northern recreational and limited entry and open access fixed gear opportunities with the lower yelloweye OY; and close to status quo for northern bottom and midwater trawl fishing opportunities with the “status quo” OYs for darkblotched, POP, and widow.

Rebuilding alternative 3 would result in higher shelf fish opportunities north and south with the higher bocaccio, cowcod, canary, and yelloweye OYs; and higher slope and midwater trawl fishing opportunities with the higher OYs for darkblotched, POP, and widow.

Rebuilding alternative 4 would dramatically lower northern shelf opportunities and some additional constraints in southern shelf fisheries north of Point Conception with the lower canary and yelloweye OYs; higher shelf fishing opportunities south of Pt. Conception with the higher bocaccio and cowcod OYs; and higher slope and midwater trawl opportunities with the higher darkblotched, POP, and widow OYs.

Rebuilding alternative 5 would dramatically lower shelf fishing opportunities coastwide with the lower bocaccio, cowcod, canary, and yelloweye OYs; and dramatically lower slope and midwater trawl fishing opportunities with the lower darkblotched, POP, and widow OYs.

2.1.2 *Precautionary Zone Groundfish Species*

Cabazon (in Waters off California)

The Council has identified one OY alternative, 69 mt, to be analyzed for the cabazon stock in waters off California (Table 2-1) for 2007 and 2008. This is the same as the status quo OY alternative. The ABC alternative identified for analysis is 94 mt for both 2007 and 2008; this alternative is based on the sum of average 2007-2008 ABCs for the northern and southern substocks (north and south of Pt. Conception), as determined in the 2005 stock assessment.

Petrale Sole

Three 2007-2008 OY alternatives for petrale sole (coastwide) have been analyzed for Council decision: 1,921 mt, 2,499 mt, and 2,883 mt (Table 2-1). This compares to the status quo OY of 2,762 mt in 2005 and 2006. The OYs are also subdivided by INPFC regions (Columbia and US-Vancouver areas and Eureka, Monterey, and Conception areas) and by latitude (north and south of 40°10' N latitude).

The OY alternatives for the Columbia and US-Vancouver areas were identified by applying the following rationale: OY Alternative 1 is based on the low spawning biomass model from the 2005 stock assessment {Lai et al. 2005}; OY Alternatives 2 and 3 are the same, and are the result of a reduction from the ABC using the 40-10 rule. The ABC alternatives identified for analysis are 2,917 mt for 2007 and 2,919 mt for 2008. Using results from the 2005 stock assessment, each ABC was calculated by summing the north ABC and the south ABC/OY.

Sablefish

The Council identified the following alternatives to be analyzed for the coastwide sablefish stock (Table 2-1): 4,574 mt and 5,934 mt. This compares to the status quo OY of 7,761 mt in 2005 and 7,634 mt in 2006. 2007 and 2008 ABCs identified for analysis are 6,210 mt and 6,058 mt, respectively. OY Alternative 1 is calculated by applying the 40-10 adjustment to the ABC derived from the low stock/production model in the 2005 sablefish assessment {Schirripa and Colbert 2005}; OY Alternative 2 is calculated by applying the 40-10 adjustment using the assessment's base case model.

Each coastwide OY alternative is also divided north and south of 36° N latitude using status quo proportions. Alternative methods for apportioning the OY were not considered because the STAR Panel {Barnes et al. 2005} recommended calculating coastwide biomass without including Conception area survey data.

2.1.3 Healthy Groundfish Species

Arrowtooth Flounder

As arrowtooth flounder is a healthy stock, the Council has identified a single ABC/OY alternative, 5,800 mt, to be analyzed (Table 2-1). This is the same as the status quo ABC/OY for 2005 and 2006; the stock has not been assessed since the previous harvest specifications process, and therefore there is no basis for identifying a value other than that of the status quo.

Black Rockfish (in Waters off Oregon and California)

The Council has specified one OY alternative for analysis for black rockfish (in waters off Oregon and California), 722 mt (Table 2-1), based on a projection from the base model in the 2003 assessment {Ralston 2003}. This compares to the status quo OYs of 753 mt in 2005 and 736 mt in 2006, both of which had been set equal to the ABC for that year. The ABC alternatives identified are 725 mt for 2007 and 719 mt for 2008, each calculated by summing the ABCs for Oregon and California.

Black Rockfish (in Waters off Washington)

As black rockfish (in waters off Washington) is a healthy stock, the Council has identified a single ABC/OY alternative, 540 mt, to be analyzed (Table 2-1). This is the same as the status quo ABC/OY for 2005 and 2006; the stock has not been assessed since the previous harvest specifications process, and therefore there is no basis for selecting a value other than the status quo. This value is based on 88% of the northern ABC for the assessed stock north of Cape Falcon.

California Scorpionfish

California scorpionfish was first assessed in 2005, and therefore 2007 will be the first year in which it is not managed as part of 'Minor Rockfish' and the first time that the Council adopts an ABC and an OY for the stock. The Council has specified two ABC/OY alternatives for analysis: 137 mt and 219 mt (Table 2-1). The first alternative, 137 mt, was derived using the recreational portion from the ABC/OY (based on the 2007-2008 average), multiplying it by 53%, dividing it by 88%, and then adding this modified value to the commercial portion of the ABC/OY (based on the 2007-2008 average). The second alternative provides an ABC/OY of 219 mt based on an average of the 2007 and 2008 ABC/OYs from the stock assessment {Maunder et al. 2005}.

Chilipepper Rockfish

The Council has specified status quo alternatives for chilipepper rockfish for 2007 and 2008 ABCs and OYs, as there is no new stock assessment from which to base new harvest specifications. These alternatives are an ABC of 2,700 mt and an OY of 2,000 mt for 2007-2008 (Table 2-1). The lower OY alternative is a precautionary specification to control the bycatch of bocaccio. The higher OY alternative equals the status quo ABC, since the stock is considered healthy. The rationale for considering this alternative is depth-based management may be an adequate bocaccio bycatch control mechanism.

Chilipepper rockfish within the Eureka INPFC region are managed within the Minor Rockfish North category, and therefore are not included within the ABC and OY alternative values.

Dover Sole

The OY alternatives specified for analysis for Dover sole stock are 16,500 mt and 28,482 mt (Table 2-1). This compares to the status quo OYs of 7,476 mt in 2005 and 7,564 mt in 2007. The first OY alternative is equal to the equilibrium MSY from the 2005 stock assessment {Sampson 2005}; the second alternative is set to the ABC alternative. The Council identified an ABC alternative of 28,522 mt for 2007 and 28,442 mt for 2008. These ABCs were calculated using the $F_{40\%}$ proxy harvest rate and represent the combined total of the south and the north portions of the stock.

English Sole

The OY alternative specified for analysis for English sole stock is 6,237 mt (Table 2-1). This compares to the status quo OY of 3,100 mt for 2005 and 2006. The Council identified an ABC alternative of 6,773 mt for 2007 and 5,701 mt for 2008. The OY alternative was determined by averaging of the 2007 and 2008 ABC alternatives. Projections from the 2005 stock assessment of English sole {Stewart 2005} were used to identify the ABC alternatives.

Lingcod

The OY alternatives specified for analysis for lingcod are 6,280 mt and 6,088 mt (Table 2-1). This compares to the status quo OY of 2,414 mt for 2005 and 2006; these 2005-2006 specifications were adopted by the Council with the lingcod rebuilding plan prior to the stock being declared rebuilt from its overfished status in November 2005. The first alternative was calculated by setting the OY equal to the coastwide ABC, as lingcod is a healthy stock. The second alternative is the sum of LCN and LCS (northern and southern lingcod substocks) OYs; the LCS OY was derived using a 40-10 adjustment. The OYs are also subdivided by INPFC regions (Columbia and US-Vancouver areas and Eureka, Monterey, and Conception areas) and by latitude (North of 42° and South of 42°). The Council's specified ABC alternatives for 2007 and 2008 are 6,706 mt and 5,853 mt, respectively.

Longspine Thornyhead

The OY alternatives specified for analysis for longspine thornyhead are 2,696 mt and 3,930 mt (Table 2-1). This compares to the status quo OY of 2,656 mt for 2005 and 2006. The first alternative, 2,696 mt, is based on assuming constant density throughout the Conception area and the proportion of the area north and south of Pt. Conception (21% of the Conception area) with a 25% precautionary reduction. The second alternative, 3,930 mt, is based on assuming constant density throughout the Conception area and the proportion of the area north and south of Pt. Conception (21% of the Conception area). As a healthy stock, the OY can be set equal to the ABC, which is how the second alternative was calculated. The OYs are also subdivided by latitude based on a GMT-recommended alternative where harvest guidelines north and south of 34°27' N latitude are analyzed. However the status quo alternative OYs for 2005 and 2006 were specified north and south of 36° N latitude. The Council's specified ABC alternatives for 2007 and 2008 are 3,953 mt and 3,860 mt, respectively.

Pacific Whiting

Pacific whiting are managed based on an annual assessment prepared jointly by U.S. and Canadian scientists. Pacific whiting harvest specifications are based on annual assessments and are only analyzed in this EIS to understand the potential bycatch implications of future whiting fisheries. The 2007 ABC and OY will be adopted by the Council at its March 2007 meeting. As placeholders, however, the Council specified the following coastwide OY alternatives for analysis: 188,348 mt and 349,790 mt (Table 2-1). This compares to the status quo coastwide OY of 364,842 mt for 2006. The placeholder ABC alternatives specified (for 2007 and 2008) are 188,682 mt and 350,409 mt.

Shortbelly Rockfish

As shortbelly rockfish is a healthy stock, the Council has identified a single ABC alternative, 13,900 mt, and also set the OY alternative to that value (Table 2-1). This is the same as the status quo ABC/OY for 2005 and 2006. Shortbelly rockfish is not an exploited stock due to its small size.

Shortspine Thornyhead

The shortspine thornyhead OY alternatives specified for analysis are 1,661 mt and 2,476 mt (Table 2-1). This compares to the status quo OY of 1,055 mt for 2005 and 1,077 mt for 2006. The coastwide OYs are the sum of OYs determined for north and south of Pt. Conception (34°27' N latitude). The Council's specified ABC alternatives for 2007 and 2008 are 2,488 mt and 2,463 mt, respectively.

For alternative 1, the OY for the area south of Pt. Conception is based on the base case assessment scenario in the 2005 stock assessment {Hamel 2005}, which indicated that 34% of the coastwide biomass is in this area, and with a 50% reduction to account for the paucity of survey data south of Pt. Conception. The 50% reduction is due to the SSC conclusion the assessment is marginally sufficient to estimate resource status compounded by the short duration and density of survey data south of Pt. Conception. The base case model assumed $h = 0.6$ and $q = 1.0$. The OY alternative 1 for the area north of Pt. Conception based on the base case assessment result indicating 66% of the coastwide biomass is in this area with a 25% precautionary reduction. The 25% precautionary reduction is due to the SSC conclusion the assessment is marginally sufficient to estimate resource status. The base case model assumed $h = 0.6$ and $q = 1.0$.

Alternative 2 OYs (for north and south of 34°27' N latitude) are based on the same biomass estimates from the 2005 stock assessment base case model, but with no precautionary reduction. Therefore, the OY alternative for the area south of Pt. Conception (841 mt) is based on an estimate of 34% coastwide biomass is in this area and the OY alternative for the north portion (1,634 mt) is based on an estimate of the remaining 66% of the coastwide biomass.

Splitnose Rockfish

As a stock assessment has not been undertaken for splitnose rockfish since the Council adopted the 2005-2006 harvest specifications, there is no basis for identifying alternatives other than the status quo. Therefore, the Council has identified the status quo OY alternative, 461 mt, and the status quo ABC alternative, 615 mt, to be analyzed for 2007 and 2008.

Starry Flounder

Starry flounder was assessed for the first time in 2005 and is now proposed to be managed with a separate ABC and OY. Previously the stock has been managed as a component stock of the Other Flatfish complex. Therefore, there are no status quo ABC or OY alternatives for the stock. The Council requested the following two OY alternatives for analysis: 890 mt and 1,186 mt (Table 2-1). Alternative 1 (890 mt) is based on a 25% reduction of the combined area OYs from the base model in the stock assessment {Ralston 2005} as a result of the 25% precautionary reduction for data poor stocks. Alternative OY 2 (1,186 mt) is based on the combined area OYs from the based model in the stock assessment. The ABC alternatives identified by the Council are 1,221 mt for 2007 and 1,395 mt for 2008.

Yellowtail Rockfish

The Council has identified the following ABC alternatives for yellowtail rockfish north of 40°10' N latitude based on the 2005 stock assessment {Lai 2006}: 4,585 mt for 2007 and 4,510 mt for 2008 (Table 2-1). As yellowtail rockfish is a healthy stock, the single OY alternative identified for analysis, 4,548 mt, is equal to the average of the 2007 and 2008 ABC alternatives.

2.1.4 Unassessed Groundfish Species and Those Managed as Part of a Stock Complex

2.1.4.1 Minor Rockfish South

The Council has identified four minor rockfish south OY alternatives for analysis: 1,753 mt, 1,855 mt, 1,898 mt, and 2,006 mt (Table 2-1). The OY alternatives calculated for nearshore species, shelf species, and slope species sum to equal the overall minor rockfish south value. The overall OY alternatives for 2007-2008 compare to the status quo OY of 1,968 mt.

The ABC alternative identified by the Council for analysis is 3,403 mt; this compares to a status quo ABC alternative of 3,412 mt for 2005 and 2006. The ABC alternative for 2007 and 2008 reflects three adjustments to account for the reassessment of blackgill rockfish and the new assessments for gopher rockfish and California scorpionfish. First, the status quo contribution of blackgill rockfish to the ABC (343 mt) was removed from the complex ABC and replaced with the new blackgill ABC/OY of 292 mt (based on the 2007-2008 average ABC/OY); this results in an overall reduction of 51 mt. Second, the status quo contribution of gopher rockfish (97 mt) was removed and replaced with the new gopher ABC/OY of 302 mt (based on the 2007-2008 average ABC/OY), resulting in an overall increase of 205 mt. Third, the status quo contribution of California scorpionfish (163 mt) was removed from the ABC as this species will now be managed under its own ABC/OY.

Minor Nearshore Rockfish Species

The complex, Minor Nearshore Rockfish south of 40°10' N latitude, is further subdivided into the following management categories: 1) shallow nearshore rockfish [comprised of black and yellow rockfish (*S. chrysomelas*); China rockfish (*S. nebulosus*); gopher rockfish (*S. carnatus*); grass rockfish (*S. rastrelliger*), and kelp rockfish (*S. atrovirens*)]; 2) deeper nearshore rockfish: [comprised of black rockfish (*S. melanops*), blue rockfish (*S. mystinus*); brown rockfish (*S. auriculatus*); calico rockfish (*S.*

dalli); copper rockfish (*S. caurinus*); olive rockfish (*S. serranoides*); quillback rockfish (*S. maliger*); and treefish (*S. serriceps*)] and 3) California scorpionfish (*Scorpaena guttata*).

The Council adopted a southern minor nearshore rockfish species OY for 2003 of 541 mt. This OY was based upon the Groundfish FMP policy for specifying OYs for unassessed species using 50% of recent landings, and was recalculated from the 2001-2002 OY of 662 mt using updates estimates of recreational and commercial harvest. For the 2004 southern minor nearshore rockfish species OY, an adjustment was made to account for removal of black rockfish; however this adjustment started with the 2002 OY of 662 mt and not the 2003 OY of 541 mt. The resulting OY of 615 mt was adopted by the Council for 2004 for the 2005-2006 management cycles. For the 2007-2007 management cycle, the Minor Nearshore Rockfish South is corrected by subtracting the black rockfish OY of 47 mt from the 541 mt OY, resulting in a value of 494 mt.

This initial value for the southern minor nearshore rockfish species OY is then adjusted to account for the new California scorpionfish and gopher rockfish assessments. The current contribution for California scorpionfish of 81.5 mt is removed from the combined OY. Because gopher rockfish cannot be managed separately from other nearshore rockfish species without significantly increasing bycatch and because of uncertainty regarding the assessment because of its poor data quality, gopher rockfish will remain in the southern minor nearshore rockfish species OY and will have a point of concern set at a level determined appropriate to the adopted OY. The following four alternatives different methods for accounting for these changes.

The 413 mt OY alternative includes the 48.5 mt contribution of gopher rockfish (494 mt minus the California scorpionfish contribution of 81.5 mt equals 413 mt). OY alternative 2 is determined by removing the current contribution for gopher rockfish (48.5 mt) from the OY and then increasing the OY by 50% of the new gopher ABC/OY of 302 mt (based on the 2007-2008 average ABC/OY; 2007 = 340 mt, 2008 = 264 mt); this calculation leads to a value of 515 mt. The 558 mt OY alternative is determined by removing the current contribution for gopher rockfish (48.5 mt) from the OY and then increasing the OY by 75% of the new gopher ABC/OY of 302 mt (based on the 2007-2008 average ABC/OY; 2007 = 340 mt, 2008 = 264 mt). OY alternative 4 is determined by removing the current contribution for gopher rockfish (48.5 mt) from the OY and then increasing the OY by the new gopher ABC/OY of 302 mt (based on the 2007-2008 average ABC/OY; 2007 = 340 mt, 2008 = 264 mt); this calculation leads to an OY value of 666 mt. These four OY alternatives compare to the status quo OY alternative of 615 mt for 2004-2005, for which the calculation is discussed earlier.

Minor Shelf Rockfish Species

The minor shelf rockfish complex south of 40°10' N latitude is composed of the following species: bronzespotted rockfish (*S. gilli*); chameleon rockfish (*S. phillipsi*); dusky rockfish (*S. ciliatus*); dwarf-red rockfish (*S. rufianus*); flag rockfish (*S. rubrivinctus*); freckled rockfish (*S. lentiginosus*); greenblotched rockfish (*S. rosenblatti*); greenspotted rockfish (*S. chlorostictus*); greenstriped rockfish (*S. elongatus*); halfbanded rockfish (*S. semicinctus*); harlequin rockfish (*S. variegatus*); honeycomb rockfish (*S. umbrosus*); Mexican rockfish (*S. macdonaldi*); pink rockfish (*S. eos*); pinkrose rockfish (*S. simulator*); pygmy rockfish (*S. wilsoni*); redstripe rockfish (*S. proriger*); rosethorn rockfish (*S. helvomaculatus*); rosy rockfish (*S. rosaceus*); silvergray rockfish (*S. brevispinis*); speckled rockfish (*S. ovalis*); squarespot rockfish (*S. hopkinsi*); starry rockfish (*S. constellatus*); stripetail rockfish (*S. saxicola*); swordspine rockfish (*S. ensifer*); tiger rockfish (*S. nigrocinctus*); vermilion rockfish (*S. miniatus*); and yellowtail rockfish (*S. flavidus*).

The Council has identified the status quo ABC and OY as the only alternative to be analyzed for 2007-2008 management cycle. The OY is set to the ABC; therefore, the ABC alternative and OY alternative for analysis are both 714 mt.

Minor Slope Rockfish Species

The minor slope rockfish complex south of 40°10' N latitude is composed of the following species: aurora rockfish (*S. aurora*); bank rockfish (*S. rufus*); blackgill rockfish (*S. melanostomus*); Pacific ocean perch (*S. alutus*); redbanded rockfish (*S. babcocki*); roughey rockfish (*S. aleutianus*); sharpchin rockfish (*S. zacentrus*); shortraker rockfish (*S. borealis*); and yellowmouth rockfish (*S. reedi*).

The Council identified one ABC/OY alternative for this complex: 626 mt. This value was determined by the following calculation: the status quo contribution of blackgill (305 mt) was removed from the complex and replaced with the new blackgill ABC/OY of 292 mt (based on the 2007-2008 average ABC/OY; 2007 = 294 mt, 2008 = 290 mt). This alternative compares to the status quo alternative ABC/OY of 639 mt.

2.1.4.2 Minor Rockfish North

The Council has identified three minor rockfish north OY alternatives for analysis: 2,250 mt, 2,270 mt, and 2,290 mt (Table 2-1). The OY alternatives calculated for nearshore species, shelf species, and slope species sum to equal the overall minor rockfish north values. The overall OY alternatives for 2007-2008 compare to the status quo OY of 2,250 mt. The Council identified the status quo ABC alternative, 3,680 mt, to be evaluated for the 2007-2008 management cycle.

Minor Nearshore Rockfish Species

The minor nearshore rockfish complex north of 40°10' N latitude is composed of the following species: black and yellow rockfish (*S. chrysomelas*); blue rockfish (*S. mystinus*); brown rockfish (*S. auriculatus*); calico rockfish (*S. dalli*); China rockfish (*S. nebulosus*); copper rockfish (*S. caurinus*); gopher rockfish (*S. carnatus*); grass rockfish (*S. rastrelliger*); kelp rockfish (*S. atrovirens*); olive rockfish (*S. serranoides*); quillback rockfish (*S. maliger*); and treefish (*S. serriceps*).

When black rockfish was originally removed from the northern minor nearshore rockfish OY, a ratio of black to blue rockfish catch was used to determine what proportion of that OY was attributable to black rockfish. However, due to the variability of blue rockfish catches, there is some concern that this ratio (92%:8% black to blue rockfish) under-represents blue rockfish catch and therefore the resulting OY (since black rockfish is managed separately). To account for this uncertainty (that is, a range of possible levels of black rockfish removal from the OY), three alternatives have been identified by the Council. OY alternative 1 is equal to the status quo OY alternative of 122 mt. OY alternative 2 (142 mt) is equal to the status quo OY alternative plus 20 mt. OY alternative 3 (162 mt) is equal to the status quo OY alternative plus 40 mt.

Minor Shelf Rockfish Species

The minor shelf rockfish complex north of 40°10' N latitude is composed of the following species: bronzespotted rockfish (*S. gilli*); bocaccio (*Sebastes paucispinis*); chameleon rockfish (*S. phillipsi*); chilipepper rockfish (*S. goodei*); cowcod (*S. levis*); dusky rockfish (*S. ciliatus*); dwarf-red rockfish (*S. rufianus*); flag rockfish (*S. rubrivinctus*); freckled rockfish (*S. lentiginosus*); greenblotched rockfish (*S. rosenblatti*); greenspotted rockfish (*S. chlorostictus*); greenstriped rockfish (*S. elongatus*); halfbanded rockfish (*S. semicinctus*); harlequin rockfish (*S. variegatus*); honeycomb rockfish (*S. umbrosus*); Mexican rockfish (*S. macdonaldi*); pink rockfish (*S. eos*); pinkrose rockfish (*S. simulator*); pygmy rockfish (*S. wilsoni*); redstripe rockfish (*S. proriger*); rosethorn rockfish (*S. helvomaculatus*); rosy rockfish (*S. rosaceus*); silvergray rockfish (*S. brevispinis*); speckled rockfish (*S. ovalis*); squarespot rockfish (*S. hopkinsi*); starry rockfish (*S. constellatus*); stripetail rockfish (*S. saxicola*); swordspine rockfish (*S. ensifer*); tiger rockfish (*S. nigrocinctus*); and vermilion rockfish (*S. miniatus*).

No change from status quo was identified by the Council for analysis; therefore the status quo ABC/OY alternative for northern minor shelf rockfish species, 968 mt, is analyzed for the 2007-2008 management cycle (Table 2-1).

Minor Slope Rockfish Species

The minor slope rockfish complex north of 40°10' N latitude is composed of the following species: aurora rockfish (*S. aurora*); bank rockfish (*S. rufus*); blackgill rockfish (*S. melanostomus*); redbanded rockfish (*S. babcocki*); rougheyeye rockfish (*S. aleutianus*); sharpchin rockfish (*S. zacentrus*); shortraker rockfish (*S. borealis*); splitnose rockfish (*S. diploproa*); and yellowmouth rockfish (*S. reedi*).

No change from status quo is identified by the Council for analysis; therefore the status quo ABC/OY alternative for northern minor slope rockfish species, 1,160 mt, is analyzed for the 2007-2008 management cycle (Table 2-1).

2.1.4.3 Other Unassessed Species

Pacific Cod

No change from status quo is identified by the Council for analysis. The OY alternative is 1,600 mt and the ABC alternative is 3,200 mt (Table 2-1).

Other Fish

The Other Fish stock complex contains all the unassessed Groundfish FMP species that are neither rockfish (family *Scorpaenidae*) nor flatfish. These species include big skate (*Raja binoculata*), California skate (*Raja inornata*), leopard shark (*Triakis semifasciata*), longnose skate (*Raja rhina*), soupfin shark (*Galeorhinus zyopterus*), spiny dogfish (*Squalus acanthias*), finescale codling (*Antimora microlepis*), Pacific rattail (*Coryphaenoides acrolepis*), ratfish (*Hydrolagus colliei*), cabezon (*Scorpaenichthys marmoratus*) (north of the California-Oregon border at 42° N latitude), and kelp greenling (*Hexagrammos decagrammus*).

No change from status quo is identified by the Council for analysis. The OY alternative is 7,300 mt and the ABC alternative is 14,600 mt (Table 2-1).

Other Flatfish

The Other Flatfish complex contains all the unassessed flatfish species in the Groundfish FMP. These species include butter sole (*Isopsetta isolepis*), curlfin sole (*Pleuronichthys decurrens*), flathead sole (*Hippoglossoides elassodon*), Pacific sanddab (*Citharichthys sordidus*), rex sole (*Glyptocephalus zachirus*), rock sole (*Lepidopsetta bilineata*), and sand sole (*Psettichthys melanostictus*).

The Council has identified an OY alternative of 4,884 mt to be analyzed. This OY is based on the ABC with a 25% precautionary reduction for sanddabs and rex sole and a 50% precautionary reduction for the remaining species. The starry flounder contribution is removed (25 mt). The status quo OY alternative is 4,909 mt for 2005 and 2006.

The Council has identified an ABC alternative of 6,731 mt to be analyzed for 2007 and 2008. This ABC alternative is based on the following historical catch levels: the highest landings of Pacific sanddabs (in 1995) and rex sole (in 1982) for the 1981-2003 period and on average landings during 1994-1998 for the remaining Other Flatfish species. The starry flounder contribution is removed (50 mt). The status quo ABC alternative is 6,781 mt for 2005 and 2006.