

GROUND FISH MANAGEMENT TEAM REPORT ON TENTATIVE ADOPTION OF 2007-
2008 GROUND FISH FISHERY SPECIFICATIONS/MANAGEMENT MEASURES AND
AMENDMENT 16-4

At its April 2006 meeting, the Council adopted final preferred alternatives for acceptable biological catches (ABCs) for all species and optimum yields (OYs) for non-overfished species. These values are listed in Table 2-1 in the Preliminary Draft Environmental Impact Statement (DEIS) (pages 3-5 in Agenda Item F.2.a, Attachment 1).

In its April 2006 statement for 2007-2008 management specifications (Agenda Item F.1.c., Supplemental GMT Report) the GMT discussed the Council's direction for this management period to "rebuild [overfished species] as quickly as possible, taking into account the status and biology of the stock, the needs of fishing communities, and the interaction of these stocks within the marine ecosystem." The Council provided further direction at that meeting, selecting two suites of preferred overfished species OYs from the lower end of the rebuilding OY range initially slated for analysis. These two alternatives were labeled at that meeting as the "Preferred Low OY" and "Preferred High OY" alternatives.

Under this agenda item, the Council is expected to make final decisions on OYs for overfished species. Additionally, if the Council wants to consider 2007 exempted fishing permits (EFPs), some yield of overfished species needs to be set-aside to accommodate EFP catch. The Council should also provide guidance on recreational harvest guidelines for canary and yelloweye rockfish. These actions will allow the Groundfish Management Team (GMT) and Groundfish Advisory Subpanel (GAP) to focus on recommendations for preferred management measures under Agenda Items F.5 and F.6.

Analytical documents available at this meeting look at the effects of the different OY levels on the environment, focusing on three Action Alternatives. Action Alternative 1 presents a management measures regime based on the Preferred Low OY alternative. Action Alternatives 2 and 3 present management regimes based on the Preferred High OY alternative, but emphasizing different fishing strategies. Summary descriptions of the action alternatives are provided in Agenda Item F.2.a., Supplemental Attachment 5, "Summary of the Biological and Socioeconomic Effects of the 2007-2008 Action Alternatives."

With regard to setting the OYs for overfished species, the Council needs to be aware of the differences in the biology of the different rockfish stocks and, as a result, the varying rebuilding schedules. Table 2-3 and Figure 2-2 in Chapter 2 of the Preliminary DEIS present the rebuilding parameters of the overfished stocks. Figure 2-2 displays the rebuilding yields and the resulting differences in median times to rebuild. Stocks with steep slopes, such as darkblotched, Pacific ocean perch (POP), and widow rockfish, are more productive; stocks with relatively flat lines, such as cowcod and yelloweye, are considerably less productive. Stocks with low productivity will take much longer to rebuild, even in the absence of fishing. Table 2-3, excerpted below, shows a variety of OYs and median times to rebuild, including those for states of no fishing (F=0), and for fishing at the Preferred Low OY and Preferred High OY levels.

	Action Alt. 1 OYs	Rebuilt Date	Action Alts. 2 & 3 OYs	Rebuilt Date	F=0 Rebuilt Date
Bocaccio	40 mt	2021.9	218 mt	2026	2021.1
Canary rockfish	32 mt	2060	44 mt	2063	2053
Cowcod	4 mt	2039	8 mt	2043	2035
Darkblotched rockfish	130 mt	2009.9	229 mt	2010.2	2009.5
Pacific ocean perch	44 mt	2015	100 mt	2015.6	2014.6
Widow rockfish	120 mt	2014	368 mt	2015	2013
Yelloweye rockfish	12.6 mt	2083	23 mt '07 20 mt '08	2083.5	2048

Comparison of years to rebuild (years) for F=0, status quo OY, and OY alternatives for 2007							
	Bocaccio	Canary	Cowcod	DKBL	POP	Widow	Yelloweye
Years to rebuild at F=0	15.1	48.0	29.0	3.5	8.6	7.0	42.0
Years to rebuild at status quo (i.e.: 2006 OY)	23.0	58.4	33.1	4.1	16.5	8.8	113.5
Years to rebuild at Preferred Low OY alternative	15.9	54.0	33.0	3.9	9.0	8.0	77.0
Percent difference in years to rebuild (Preferred Low OY vs. status quo)	-30.9%	-7.5%	-0.3%	-4.9%	-45.4%	-9.1%	-32.2%
Years to rebuild at Preferred High OY alternative	20.0	57.0	37.0	4.2	9.6	9.0	77.5
Percent difference in years to rebuild (Preferred High OY vs. status quo)	-13.0%	-2.4%	11.8%	2.4%	-41.8%	2.3%	-31.7%

Estimates of rebuilt dates for F=0 illustrate **how soon it is possible for each stock to recover to B_{MSY}**, given life history and environmental constraints in the absence of fishing beginning in 2007. These rebuilt date estimates are based on the most recent stock assessments for these species. Depending on data and methods used, the rebuilt dates for these species could be revised in future stock assessments, even in the absence of fishing.

In our April 2006 statement on 2007-2008 harvest levels, we recommended, and we continue to recommend, that the Council **take into account the status and biology of the stocks** by:

- Looking at the depletion rates of each overfished species and the sensitivity of those species to changes in OY to structure suites of OYs that focus protection on the more sensitive species. The species with rebuilding times that are most sensitive to changes in OY are canary rockfish, yelloweye rockfish, and cowcod. We believe that the suites of Preferred Low and Preferred High OYs appropriately focus greater protection on the species more sensitive to OY changes.

- We also recommended that the OYs for overfished species include allowances for research catch, in order to ensure that future information could be gathered on the status and biology of these and other fish stocks. In setting the Preferred High OY alternative, the Council heeded our advice and included research catch amounts in the component overfished species OYs. Extractive scientific research under the Preferred Low OY alternative would come at a cost of further lost fishing opportunity. For the purpose of estimating economic effects of the Preferred Low OY alternative, the GMT assumed that there would be no Exempted Fishing Permits (EFPs) under that alternative.

In order to ensure that overfished species are managed within their rebuilding OYs, projected overfished species mortalities are modeled at the beginning of the year, and subsequent adjustments to management measures are made inseason to keep total catch within the OYs. However, there is uncertainty in both the stock assessments and pre-season projections that need to be considered when setting the rebuilding OYs. Taking this uncertainty into consideration, the GMT makes recommendations below on OYs for specific overfished species.

In its guidance on **taking into account the needs of fishing communities**, the 9th Circuit Court of Appeals stated, “The purpose of the [Magnuson-Stevens] Act is clearly to give conservation of fisheries priority over short-term economic interests. The Act sets this priority in part because the longer-term economic interests of fishing communities are aligned with the conservation goals set forth in the Act.” The 9th Circuit goes on to state “The natural reading of this language, however, is 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.”

We discussed the three action alternatives and the zero harvest alternative and their effects on fishing communities in terms of: short term economic impacts compared to status quo, short term economic impacts compared to historic economic impacts, short term economic impacts compared to the 2000 disaster declaration by the Secretary of Commerce, and short term economic impacts of each action alternatives when compared to one another. While there is currently no definition that establishes a threshold for identifying “disastrous short term consequences,” there are several precedents that help put the economic impacts of the action alternatives into perspective:

- The Secretary of Commerce’s 2000 commercial fishery disaster declaration for the groundfish fishery;
- The US department of Agriculture defines severe production losses in a county as a reduction countywide of at least 30 percent; and
- The Small Business Administration will make a physical disaster declaration when at least three businesses have uninsured losses of 40% or more of their estimated fair replacement value.

Under the status quo fishery, revenues are lower than when compared to revenues generated in 2000, the year of the disaster declaration. In 2000, 2001, and 2002 groundfish exvessel revenues were approximately \$62 million, \$52 million, and \$43 million respectively. Recreational angler trips numbered an estimated 1,218,000 in 2000, 927,000 in 2001, and 843,000 in 2002.

The action alternatives result in exvessel revenue, recreational angler trips, and income impacts that continue to be lower than when the disaster declaration was made. Changes in personal

income are lowest under action alternative 1 and this alternative reduces personal income by \$57.6 million from status quo levels (see table 7-68g, page 505 of the Preliminary DEIS). The percent change in income impacts (compared to status quo) under action alternative 1 reduces personal income by more than 40% for many port groups. Action Alternative 2 reduces commercial groundfish fishery income by more than 20% for some port groups. Action Alternative 3 reduces commercial groundfish fishery income by less than 15% for all port groups (see Table 7-70, page 510 of the Preliminary DEIS). Recreational fisheries follow the same general pattern. Action Alternative 1 reduces recreational groundfish personal income by more than 40% for some regions. Action Alternative 2 reduces personal income by more than 40% for some regions. Action Alternative 3 reduces recreational groundfish personal income by more than 25% for several regions, and more than 30% for one region (see Table 7-71, page 511 of the Preliminary DEIS).

In addition to those short-term and large-scale effects of the 2007-2008 action alternatives that are predictable pre-season, the GMT is also concerned with the less predictable effects of the Preferred Low OY alternative, which supports Action Alternative 1. In our April statement on 2007-2008 harvest specifications, we reminded the Council of the uncertainty inherent in inseason groundfish fisheries management, stating “information available on the different fisheries varies in both its quality and abundance – both pre-season, and as we proceed through the seasons.” The Preferred Low OY/Action Alternative 1 requires a variety of fisheries to be either severely constrained or closed by January 1, 2007. Any flexibility to respond to management uncertainty would require further closures and constraints upon severely constrained fisheries. It is also expected that the Preferred Low OY/Action Alternative 1 could trigger a host of inseason fishery closures to accommodate fishery information received inseason.

Chapter 3 of the Preliminary DEIS **takes into account the interaction of overfished species within the marine ecosystem.** The rebuilding rockfish stocks on the West Coast and all rockfish more generally, occupy a broad range of ecological niches and trophic roles in the California Current ecosystem, since both juvenile and adult rockfish are important prey items to a wide range of other rockfish, other piscivorous fishes, seabirds and marine mammals. From a holistic perspective, the fishing down of any species, whether to or below target levels, alters energy pathways and has the potential to affect ecological structure. Unfortunately, the research and data necessary to understand such potential impacts, or to develop and adequately parameterize multispecies models to evaluate such impacts reliably, are lacking for most ecosystems, including the California Current.

As a result, there is no foundation upon which to consider the consequences of historical overfishing, or alternative strategies in rebuilding depleted species, with respect to the potential effects or trade-offs to ecological integrity and future sustainability. For several rebuilding species, particularly those at higher trophic levels (piscivorous species such as cowcod, yelloweye and bocaccio), these impacts may be more significant at smaller spatial scales for some habitat types and regions. Existing spatial closures for essential fish habitat protection and overfished species bycatch reduction should provide adequate protection to sustain ecological relationships and interactions. However, there is no meaningful way of quantitatively assessing the risk of undesirable consequences to the ecosystem of choosing one OY alternative over the other. As the estimated impacts to the rebuilding trajectories for most of these species are

forecast to be relatively modest, it stands to reason that the potential consequences of the differing OY alternatives to the ecosystem are also relatively modest.

Specific Overfished Species OYs

The results of the most recent round of stock assessments for overfished species were, in general, more optimistic than the prior round of assessments. The exception to this is yelloweye rockfish, which was substantially more pessimistic. As a result of the need to restrict the fisheries based on the new yelloweye assessment, the GMT recommends the OY ramp-down strategy for this species, which results in a lower OY, but would provide time to collect much-needed additional data that could better inform new management measures for greater yelloweye protection.

Cowcod may be viewed as an unproductive stock, similar to yelloweye; however the most recent round of assessments shows this stock is less depleted than previously thought. Because of the more optimistic stock assessment result, a dramatic decrease in the OY may not be necessary like the proposed decrease in the yelloweye OY. The GMT feels that the relatively unproductive nature of these stocks justifies a relatively restrictive management scheme.

Canary rockfish and bocaccio may be viewed as being more productive than yelloweye and cowcod, but less productive than Pacific ocean perch, darkblotched rockfish, and widow rockfish. The GMT recommends adopting OYs for these species that are relatively close to pre-season catch predictions because of the greater depletion and lower productivity of these stocks. While setting an OY close to predicted catch is expected to result in substantial inseason actions to stay within those OYs (because of inseason deviations from pre-season catch predictions), the GMT feels that the productivity of these stocks justifies a relatively more restrictive management scheme.

Pacific ocean perch, darkblotched rockfish, and widow rockfish may be viewed as being less depleted and more productive than the other three depleted species. If the Council wishes to accommodate the GMT's request to allow for uncertainty and management flexibility by building in a difference between the OY and predicted catch, the GMT feels that this difference or "buffer" should be greatest around these species. Doing so would have a relatively small impact on the rebuilding times for these species, but would accommodate management flexibility, reduce the need for inseason adjustments to management, and result in greater stability to the management regime. The GMT would also like to note that when a buffer is set between the expected (scorecard) catch and the adopted OY, the benefits realized in more rapid rebuilding times when actual catches are less than the OY are captured in subsequent stock assessments and assessment updates (as realized catches, rather than OYs, are entered into subsequent assessments as data).

As discussed above, the Council sets harvest levels and management measures pre-season with the expectation that the management measures will adequately constrain harvest to keep total catch within established harvest levels. As each season progresses, new information becomes available, often modifying the assumptions that were made pre-season about catch and bycatch rates. When inseason catch rate estimates vary from pre-season catch rate estimates, the Council takes inseason action to either constrain the fishery to stay within OYs, or liberalize the fishery to achieve OYs for non-overfished species while staying with overfished species OYs. Inseason revisions to management measures are necessary to maintain rebuilding schedules and to prevent

overfishing, but the more inseason measures vary from those set pre-season, the less predictable fishing business management becomes for fishery participants.

Species That Are Most Sensitive to Changes in OY

Cowcod While the cowcod stock assessment is data poor, the GMT believes that continued use of closed areas as a management tool would appropriately keep the catches of cowcod to an acceptable level. The GMT notes that all of the Action Alternatives, including the No Action Alternative, would result in projected cowcod mortalities that are less than the Preferred High OY (by 0.8-4.7 mt). The 8.0 mt Preferred High OY for cowcod is calculated under an 80% probability of rebuilding by T_{MAX} , or a rebuilt date of 2043. Projecting the status quo harvest rate forward would result in an OY of 4.6 for 2007 and 2008, with a rebuilt date of 2040.

Yelloweye Yelloweye rockfish have a life history that illustrates the classic challenge of rebuilding overfished West Coast rockfish stocks – they are slow to mature, have low productivity, and can live in excess of 100 years. Given their low productivity, any incremental change in yelloweye rockfish harvest *levels* can notably change the associated constant harvest *rates*. For example, a 2007 OY of 12 mt would result in a constant harvest rate that would extend the rebuilding period beyond the $F=0$ rebuilt date by 30 years (from 2048 to 2078), while a 2007 OY of 12.6 mt would result in a constant harvest rate that would extend the rebuilding period beyond the $F=0$ by 35 years (from 2048 to 2083).

For yelloweye rockfish, the GMT recommends a departure from the Council's practice with other overfished species of setting constant harvest rates that are intended to carry through time to the rebuilt dates. We recommend that yelloweye OYs in 2007-2010 be set at ramping down harvest *levels*, beginning with 23 mt in 2007 and continuing to 20 mt in 2008, ultimately reaching 13.5 mt in 2011. Beginning in 2011, the yelloweye rockfish rebuilding plan would revert to a constant harvest rate of $F = 0.0101$ through to the rebuilt date of 2083.5. By contrast, an initial 2007 OY based on this harvest rate would result in an OY of 12.6 mt and a rebuilt date of 2083. As points of reference, the 2006 yelloweye OY is 27 mt, with expected total catch currently estimated at 21.1 mt.

By any standards, the yelloweye assessment data are sparse; the assessment is tuned to recreational catch-per-unit-of-effort (CPUE) data with a decreasing period of coverage from south to north, and size and age composition information and fishery independent data are particularly lacking. Additionally, yelloweye rockfish have a low vulnerability to trawl gear (which is why the NMFS trawl survey is a poor index for this stock), and WCGOP data for fixed gear fisheries is minimal. Poor yelloweye rockfish data availability makes provision of a yelloweye research catch allowance critical to future assessment, management and rebuilding efforts. Therefore, the GMT continues to support the ramp-down approach for yelloweye. This approach would provide time for: 1) additional data to be collected through additional and/or enhanced research, such as the International Pacific Halibut Commission survey; 2) fishermen, such as fixed gear fishery participants, and processors who will be affected by the yelloweye rebuilding plan to make decisions that could affect their future businesses; and 3) the Council, its advisory bodies, and the states to identify, explore, and further develop management tools to manage to the lower rebuilding OYs that are anticipated over the next few years.

Yelloweye rockfish are sedentary in nature and tend to favor the high rocky relief, or untrawlable habitat, found off the northern West Coast. Due to their habitat preference, yelloweye rockfish are rarely encountered in trawl fisheries, especially in light of small footrope requirements on the shelf. Most yelloweye harvest occurs in tribal and non-tribal hook and line fisheries, and in recreational fisheries. However, some of the specific rocky relief areas are prime recreational halibut and lingcod fishing areas, while other areas encompass favorite commercial fishing spots. Logbook data, or data on fishing locations by these different fisheries is, for the most part, not collected, and at-sea observations are minimal. Therefore, the states would like to have a series of public meetings with affected stakeholders to develop potential area closures for yelloweye rockfish conservation, which could be in place beginning in 2009, and design and implement a logbook program for fixed gear fisheries. Additionally, further research to examine survivability and recreational gear selectivity may provide information to help design management measures for the 2009-2010 management cycle.

Given the high degree of uncertainty in the assessment, the GMT developed alternatives that target amounts less than the Preferred High OY. For example, the estimated mortalities for Action Alternatives 2 and 3 are 14.3 mt and 18.3 mt, respectively, compared to an initial ramp-down OY of 23 mt, which leaves residual amounts of 4.7-8.7 mt in 2007, and 1.7-5.7 mt in 2008.

Species That Are Moderately Sensitive to Changes in OY

Bocaccio The bocaccio stock assessment demonstrates that recruitment is highly variable and anecdotal evidence suggests there may be a strong incoming year-class. Should this strong year-class become evident, past experience indicates that young bocaccio are difficult to avoid for most fisheries and, consequently, encounter rates would be expected to increase. Additionally, the commercial trawl preseason catch projections for bocaccio have been off by a significant amount (100-200%) as compared to post-season catch estimates in recent years, and fixed gear West Coast Groundfish Observer Program (WCGOP) data, especially for the area south of 40°10'N. lat., is fairly sparse. Therefore, we recommend that the Council consider management measures that would result in preseason catch projections that are significantly less (e.g., around 15-20 mt) than the OY to cover this uncertainty. The GMT notes that Action Alternatives 2 and 3, and the No Action Alternative would result in projected bocaccio mortalities that are significantly less, by 32-107 mt, than the Council's Preferred High OY of 218 mt.

Canary Unavoidable incidental catches of canary rockfish occur in trawl, fixed gear, open access, and recreational fisheries targeting groundfish, as well as commercial and recreational fisheries targeting species other than groundfish. Canary's wide geographic distribution and catchability in all fisheries makes it difficult to manage with species-specific RCAs, like yelloweye rockfish and cowcod. Canary is one of the most constraining stocks in 2007-2008 management. The commercial trawl preseason catch projections have been off by a factor of 75-100% as compared to post-season catch estimates in recent years. WCGOP data for fixed gear is fairly sparse, and there is very little observer data for open access and recreational fisheries. Therefore, the GMT recommends the Council consider management measures that would result in preseason catch projections that are slightly less than the Preferred High OY. All of the Action Alternatives, including the No Action Alternative, would result in projected canary mortalities that are less than the Preferred High OY (by 2.7-10.9 mt).

Species With OYs Affected by the Rebuilding Paradox

Darkblotched In the recent past, the commercial trawl preseason catch projections for darkblotched rockfish have been off by as much as 250% as compared to post-season catch estimates. Darkblotched is rarely caught by fixed gear and recreational fisheries. While the GMT has significantly increased the precision in its catch estimation methodology over the past year, inseason data indicates that actual catches are still about 50% higher than what was projected preseason for 2006. Additionally, this species is nearing its rebuilt level, with particularly strong year classes from 1999 and 2000 that are now entering the fishery. Between 2000 and 2005, both the biomass and the spawning output of darkblotched roughly doubled. The biomass is expected to increase by an additional 40% from current levels by 2010, with spawning output doubling again in that period, at which point the stock is expected to be rebuilt based on the assessment point estimate.

This rapid darkblotched stock increase means that there would likely be increased encounter rates for darkblotched in 2007 and 2008 (i.e., the “rebuilding paradox” of not being able to avoid higher catches as the stock approaches target biomass levels.) Therefore, the GMT recommends the Council consider including a relatively high amount of OY to cover this rebuilding paradox and continued catch projection modeling uncertainty. The GMT notes that, while the Action Alternatives, including the No Action Alternative, all result in projected darkblotched mortalities that are less than the Preferred High OY (by 18.2-32.5 mt,) the amount of residual may not be sufficient to address the high variability in encounter rates as the stock rebuilds. As a potential consequence of variable encounter rates, darkblotched bycatch may jeopardize commercial slope fisheries such as the DTS and winter petrale fisheries. The Council has repeatedly heard testimony from industry on the importance of winter petrale and DTS fisheries in maintaining a permanent work force, and avoiding loss of markets to other supply sources which, once lost, can be difficult to regain.

Pacific ocean perch The commercial trawl preseason catch projections for Pacific ocean perch (POP) have been off by as much as 100% as compared to post-season catch estimates in recent years; however, the GMT has significantly increased the precision in its catch estimation methodology over the past year, especially for trawl. Like darkblotched, POP is rarely caught by fixed gear and recreational fisheries. However, POP is also nearing its rebuilt level, so there would likely be increased encounter rates for POP in 2007 and 2008. Therefore, the Council may wish to consider including a relatively high amount of OY to cover the rebuilding paradox and this uncertainty. Similar to darkblotched, unless there is sufficient OY available to address these items, POP will likely constrain commercial slope fisheries. However, unlike darkblotched and other overfished stocks, there is expected to be hardly any residual for POP (i.e., no residual for Action Alternatives 1 and 3, and a residual of 1.5 mt in Action Alternative 2). This is because the OYs analyzed for the Action Alternatives for POP for 2007 and 2008 (which are 44 mt and 100 mt) are significantly reduced from the 2006 OY level of 447 mt. These reduced OYs were not the result of the recent stock assessment or rebuilding plan, but were proposed from recent catch levels in the commercial slope fisheries, which are more significantly constrained by darkblotched rebuilding levels.

Widow Rockfish For widow, the commercial trawl preseason catch projections have been off by as much as 100% as compared to post-season catch estimates in recent years; however, the GMT has significantly increased the precision in its catch estimation methodology over the past year,

especially for trawl, and catches of widow are small in fixed gear and recreational fisheries. However, widow is also nearing its rebuilt level, so there would likely be increased encounter rates for widow in 2007 and 2008. Therefore, the GMT recommends the Council consider management measures, which would result in preseason catch projections that are slightly less than the Preferred High OY. Action Alternatives 2 and 3, would result in projected widow rockfish mortalities that are significantly less than the Preferred High OY (by 176-224 mt); however, Action Alternative 1 with the low OY for widow has little residual (3.8 mt) remaining.

Harvest Guidelines for Canary and Yelloweye Rockfish

The Council needs to set separate harvest guidelines for canary and yelloweye rockfish for the recreational fisheries, to be divided at the Oregon/ California border. Under status quo management the Council had adopted harvest guidelines for canary and yelloweye recreational fisheries. The 2006 scorecard represents these harvest guidelines; the 2005 scorecard reflects the end-of-season fishery impacts that actually occurred. Following Council guidance at its April 2006 meeting, the GMT constructed scorecards representing different allocation scenarios (Tables 4-43 through 4-47 in Agenda Item F.2.a Attachment 2, pages 133-140). The recreational fishery harvest guideline alternatives in the table below are taken from those scorecards. These harvest guidelines represent proportional reductions from the 2005 or the 2006 scorecard in order to constrain total mortality below the Preferred Low or the High OY alternatives. One scenario depicts the harvest guidelines if all of the canary and yelloweye rockfish were allocated to the recreational fisheries.

Canary Rockfish recreational harvest guideline/ target alternatives

	2006 scorecard	High OY		Low OY			
		Using 2006 scorecard	Using 2005 scorecard	Using 2006 scorecard	Using 2005 scorecard	All Rec, w/ 2006 scorecard	All Rec, w/ 2005 scorecard
WA	8.5	1.6	1.4	1.1	1.6	2.1	4.7
OR		6.6	5.4	4.3	4.1	8.3	12.1
CA	9.3	9	2	5.9	1.7	11.4	5

Source: Tables 4-43 to 4-47 in Agenda Item F.2.a Attachment 2, pages 133-140

Yelloweye Rockfish recreational harvest guideline/ target alternatives

	2006 scorecard	High OY				Low OY			
		Using 2006 scorecard		Using 2005 Scorecard		Using 2006 Scorecard	Using 2005 Scorecard	All Rec, w/ 2006 scorecard	All Rec, w/ 2005 scorecard
		<u>2007</u>	<u>2008</u>	<u>2007</u>	<u>2008</u>	<u>2007-8</u>	<u>2007-8</u>	<u>2007-8</u>	<u>2007-8</u>
WA	6.7	3.5	3	5.4	4.4	1.6	2.4	2.6	3.9
OR		3.2	2.7	4.2	3.5	1.5	1.9	2.3	3.1
CA		3.7	3.7	3.1	0.9	0.8	1.7	0.4	2.7

Source: Tables 4-43 to 4-47 in Agenda Item F.2.a Attachment 2, pages 133-140

** Note that Table 4-61 (p. 154 in F.2.a Attachment 2) gave the California recreational 2006 harvest guidelines, rather than the no action impact estimates. The no action impact estimates should be 6.1 mt for canary rockfish and 1.5 mt for yelloweye rockfish. The no action impact estimates are correctly listed for the other states in Tables 4-59 and 4-60.