Yelloweye Rockfish Recreational Harvest Guideline Catch-Sharing Options for the 2009-2010 Regulatory Specifications and Implications for the California Recreational Fishery

Since 2000, west coast states have modified their recreational fishery regulations to meet constraining harvest guidelines (HGs) for bocaccio, cowcod, canary rockfish, yelloweye rockfish and lingcod. Yelloweye rockfish is now the most constraining species in the recreational fisheries of Washington, Oregon and northern California north of Point Arena. More conservative recreational alternatives are being developed by all three states to meet lower optimal yields (OYs) for yelloweye rockfish for the 2009-2010 seasons so that harvest limits are not exceeded. Equitable and valid catch-sharing criteria need to be applied to the OY alternative selected for yelloweye rockfish by the Pacific Fishery Management Council (Council), so that recreational fishing opportunity in any one state is not disproportionately reduced.

Yelloweye Rockfish Optimum Yields

Yelloweye rockfish were declared "overfished" based on the first assessment of the stock in 2002, and since then the stock has been managed under strict rebuilding plans. The OYs have varied annually from 22 metric tons (mt) in 2003 and 2004, up to 27 mt in 2006, and down to 20 mt in 2008. In 2006, the Council chose a "ramp down" strategy to set OYs for 2007-2008 at 23 and 20 mt respectively, with lower allowable harvests each year until 2011.

The most recent assessment was completed in 2007 and the proposed OY alternatives for 2009-2010 are derived from that assessment's rebuilding plan. The OY alternatives are even lower than past years ranging from 13 to 17 mt; under some alternatives, the values decline from 2009 to 2010. At the March 2008 Council meeting, the Council chose preliminary preferred OYs for yelloweye rockfish of 17 mt (2009) and 14 mt (2010). Generally, when developing management measures for the two year cycle, measures are designed to keep within the lowest year's OY.

Fishery Sector Apportionment

The apportionment of catch among sectors is dependent on the OY adopted by the Council. After an OY is adopted, it is assigned among all fishery sectors, including various directed commercial fishery sectors, and the recreational fisheries in Washington, Oregon, and California. Each sector manages their fishery to their "allocation" based on their proposed management measures.

The tribal fisheries, Open Access incidental fishery sectors, research and Exempted Fishing Permit set asides are not affected by the adopted OY and their "set aside" is not changed under any OY or catch sharing alternatives (they are typically thought of as the "unchangeables"). The current combined total projected catch of these "unchangeable" sectors represents approximately 6 mt that is "taken off the top" before the remainder of the OY is divided among the other sectors. As a result, the portion remaining to the other commercial and recreational sectors will be determined based on the OY finally adopted in June and on the specific catch-sharing strategy used to apportion catch.

Recreational Fishery Sector Catch Sharing and Harvest Guidelines

Catch-sharing strategies can be based on past catches if management measures are not changing, past projected impacts, past HGs, or on projected future impacts. The strategy may be based on actual tonnage if the OY has not changed or, when the OY has increased or decreased, the strategy may be based on percentages of the OY which can be used to determine the amount (mt) that each sector receives. Sharing among the three states' recreational fisheries may be based on dividing up a separate recreational portion set aside, or considered along with the other sectors when the OY is divided up. Formal HGs are set for the recreational fisheries and may be set individually or combined between states (see Table 1). California and the other states design their management measures to meet their HGs.

In 2005, the OY was 26 mt, the resulting total combined recreational HG was 13.1 mt, and the California HG was set at 3.7 mt. In 2006, the OY was 27 mt, the combined annual recreational HG for all three states was 10.4 mt, and the California HG was also 3.7 mt, which represented 36 percent of the entire recreational HG. In 2006, the estimated catch in California's recreational fishery nearly reached its HG, at 3.5 metric tons (with a 30 fm depth restriction in the

Northern Management Area and a 20 fm depth restriction in the North-Central Management Area).

The current 2007-2008 catch-sharing, which differs from that of 2006, resulted from a set-aside for the recreational fishery that was divided among states based on projected impacts in addition to past HG and catch information. In 2007 and 2008, with 23 mt and 20 mt OYs respectively, the respective annual recreational HGs for all states combined were 10.4 mt and 8.9 mt (Table 1). By state, the recreational HGs adopted for management for both 2007 and 2008 were 3.5 (WA), 3.3 (OR), and 2.1 (CA), totaling 8.9 mt, providing California with only 24 percent of the entire recreational yelloweye rockfish HG, down from 36 percent in 2006.

Because the lower 2008 8.9 mt HG was the number used for developing management measures rather than 10.4 mt, a residual 1.5 mt unassigned recreational “buffer” existed in 2007, which provided all states some insurance against any overage of recreational catch. This 1.5 mt buffer disappeared in 2008 when the OY decreased to 20 mt, and the HG decreased to 8.9 mt, requiring all states to manage stringently to ensure their portion of the HG was not exceeded.

When California did its projection modeling in 2006 for the 2007-08 management cycle, it projected that its management measures would constrain yelloweye rockfish catches to a level below its 2.1 mt allocation. At the time, management measures were designed specifically to constrain take of canary rockfish, rather than yelloweye rockfish, as canary rockfish was the most limiting species off California. The result was a May-December season in the Northern Management Area and June-November in the North-Central Management Area with a 30 fm depth restriction in both areas.

Table 1. Recreational Harvest Guidelines for Yelloweye Rockfish 2005-2008

Harvest Guideline (Metric Tons)			
Year	**CA**	**OR**	**WA**
2005	3.7	9.4	
2006	3.7	3.2	3.5
2007*	2.1	3.3	3.5
2008	2.1	3.3	3.5

*Note: 2007 also allowed 1.5 mt of unassigned recreational HG "buffer" to be shared between states as needed

California Recreational Catch Projection Methodology

California uses a catch projection model to develop season and depth measures that will meet constraining HG alternatives. The model makes assumptions about catch by month and in depth bins and then sums the totals to determine estimated impacts. The projection of the 2007 HG for the California recreational fishery was based on a model projection that did not accurately reflect the proportion of catch by depth and proportion of catch by month for yelloweye rockfish. The resulting under-projection of yelloweye rockfish impacts resulted in a California yelloweye rockfish recreational HG of 2.1 mt for 2007 and 2008, lower than the previous 3.7 mt in 2006. Because California projected these lower yelloweye rockfish catches under the canary management measures, it relinquished the unaccounted-for portion of their 2006 yelloweye rockfish recreational HG (3.7 – 2.1) to the other states to minimize the need for further reductions in Oregon and Washington's recreational fisheries management strategy in 2007-2008.

Re-Projection of the 2007-2008 Recreational Impacts

California subsequently revised its projection model to make better use of recent sample data from the California Recreational Fisheries Survey (CRFS) program and to more accurately represent the yelloweye rockfish catch in the Northern and North-Central Management Areas.

- The proportion of catch by depth information has been revised and now uses more recent catch data from CRFS to produce more current, region–specific proportions of catch by depth with a higher sample size than

previously available, thus providing improved projections that represent the current distribution of catch. The revised proportions of catch by depth indicate that the previous proportions under-projected the proportion of catch derived from depths between 20 and 30 fathoms.

- The monthly distribution of catch has also been revised to better reflect the proportion of catch accruing in a given month with season restrictions in place, addressing the apparent "opener effect" resulting from anglers fishing in greater numbers early in the season than they had historically under a year round season. The previous proportions of catch under projected the proportion of catch accruing in the first few months of the season resulting in an under-projection of catch by mid season.

The revised model was used to recalculate the estimated 2007 and 2008 projected catch using the same 2004 and 2005 base data and the 2007-2008 regulations used in the previous model. With only changes to catch by depth and monthly distribution of catch, the new model's projected impacts for 2007 and 2008 were 3.0 mt; considerably above prior estimates.

Recreational Fishery Allocations for 2009-2010

The reduced OY options for 2009-2010 mean that additional constraints to all of the recreational fisheries will be needed to meet lower HGs. As a result, a re-examination of the catch-sharing arrangement is needed, since the impacts differ considerably between the states in terms of impact to fishing seasons and depth constraints. Three options have been developed based on Council guidance, as described below, which would allocate the allowable recreational HG using different percentages.

At the November 2007 Council meeting, the Council gave the GMT direction on recreational catch-sharing for *initial* analyses of the 2009-2010 recreational yelloweye rockfish impacts. This guidance included using the status quo proportion of the combined recreational "allocation" relative to the other fishery sectors. The GMT used the recreational HGs for 2007 as the basis for catch-sharing among recreational sectors in these initial analyses.

Due to concerns regarding the validity of the current catch sharing using the 2007 HG, the Council requested at the April 2008 meeting that the GMT analyze the HGs for each state's recreational fishery that would result from three

recreational HG catch-sharing options. The recreational catch-sharing criteria are described below for each option and represent the percentages that would be applied to the new lower OY values to determine the actual HG amounts. Actual percentages for each state under the three options are provided in Table 2.

Option 1. The same percentages determined from 2007 recreational Harvest Guidelines, which is the Status Quo (SQ).

Option 2. The percentages calculated from 2007 Harvest Guidelines for Washington and Oregon, and using a re-projection of the 2007 California recreational impacts.

Option 3. The percentages determined from the 2006 Recreational Harvest Guidelines for the three states.

Table 2. The three recreational harvest guideline catch-sharing options and the respective state shares in percentages.

Catch-sharing Option	Criteria	Washington Catch-sharing Percentage	Oregon Catch Sharing Percentage	California Catch-sharing Percentage
1	2007 SQ HG	39%	37%	24%
2	Re-projected 2007 CA Catch	36%	34%	31%
3	2006 HG	34%	31%	36%

Option 1 – Each State's Allowance for 2009-10 follows from the 2007 Catch Sharing Arrangement

The harvest guidelines for the recreational fishery in 2007 were 2.1 mt in California, 3.3 mt in Oregon and 3.5 metric tons in Washington. The harvest guidelines for each of the OY options for 2009-2010 using the 2007 catch sharing arrangement are provided in Table 3 below.

Table 3. Catch-sharing Option 1: 2009-2010 Recreational Harvest Guidelines based on proportions derived from the 2007 Status Quo Harvest Guidelines

Coastwide 2009-2010 Yelloweye Optimum Yield Alternatives (Metric Tons)			
	13	**14**	**17**
Recreational Harvest Guidelines (mt)			
Washington (39% of HG)	1.8	2.1	2.8
Oregon (37% of HG)	1.7	1.9	2.6
California (24% of HG)	1.1	1.2	1.7
WA-OR-CA Rec HG Total *	4.6	5.1	7.1

* If the PFMC chooses to apportion catch among all sectors, rather than within the recreational sector, the overall and state totals would change. See Table 6.

Option 2 - Each State's Allowance for 2009-10 follows from the 2007 Catch Sharing Arrangement, but Adjusts 2007 Projections Following From Model Improvements

As an alternative to the 2007 HG catch sharing option (Option 1 above), the Council directed the GMT to use the revised California catch projection model described above to project what the 2007 catch would have been using the improved model, and use the resulting predicted catch in lieu of the 2.1 mt harvest guideline for California in apportioning catch. The revised model projected a California recreational yelloweye rockfish catch of 3 mt. The catch sharing percentages for the recreational harvest guideline calculated from 2007 Harvest Guidelines for Washington (3.5 mt) and Oregon (3.3 mt), and the 3 mt projection of the 2007 California recreational impacts provide the basis for this catch sharing option. The resulting percentages of the coast-wide recreational yelloweye rockfish Harvest Guideline and the corresponding harvest guideline under each OY under consideration by the Council are provided in Table 4.

Table 4. Catch-sharing Option 2: 2009-2010 Recreational Harvest Guidelines using Proportions derived from the 2007 Washington and Oregon Harvest Guidelines and the Re-projected 2007 California Recreational Impacts

Coastwide 2009-2010 Yelloweye Optimum Yield Alternatives (Metric Tons)			
	13	**14**	**17**
Recreational Harvest Guidelines (mt)			
Washington (36% of HG)	1.6	1.8	2.5
Oregon (34% of HG)	1.6	1.7	2.4
California (31% of HG)	1.4	1.6	2.2
WA-OR-CA Rec HG Total *	4.6	5.1	7.1

* If the PFMC chooses to apportion catch among all sectors, rather than within the recreational sector, the overall and state totals would change. See Table 6.

Option 3 - Each State's Allowance for 2009-10 follows from the 2006 Catch Sharing Arrangement

Although improved, the California recreational model still runs some risk of under-estimating projected catches of yelloweye rockfish. The third catch sharing alternative under consideration would utilize the 2006 recreational HGs as the basis for catch sharing. In 2006, the estimated catch of 3.5 mt in the California recreational fishery nearly reached the 3.7 mt HG. The catch sharing percentages and Harvest Guidelines for yelloweye rockfish catch that would result from application of the 2006 proportions as the basis for catch sharing are provided in Table 5 below.

Table 5. Catch-sharing Option 3: 2009-2010 Recreational Harvest Guidelines Based on Proportions Derived from the 2006 Harvest Guidelines

Coastwide 2009-2010 Yelloweye Optimum Yield Alternatives (Metric Tons)			
	13	**14**	**17**
Recreational Harvest Guidelines (mt)			
Washington (34% of HG)	1.6	1.7	2.4
Oregon (31% of HG)	1.4	1.6	2.2
California (36% of HG)	1.6	1.8	2.5
WA-OR-CA Rec HG Total *	4.6	5.1	7.1

* If the PFMC chooses to apportion catch among all sectors, rather than within the recreational sector, the overall and state totals would change. See Table 6.

Analysis of Recreational Catch Sharing Alternatives

All states will have to reduce recreational opportunities under the preferred 14 mt OY alternative for yelloweye rockfish. The following discussion is intended to illustrate the differences in recreational fishing opportunity among states with status quo 2007 HG catch sharing option (Option 1) and the 2006 HG catch sharing option (Option 3). The opportunity available in each state under Option 2 is intermediate to options 1 and 3. As a result, Option 2 is not specifically analyzed.

Option 3 Analysis

Under Option 3, Washington and Oregon recreational fisheries will receive a lower percentage of the HG than under the status quo 2007 HG sharing. In Oregon, the HG would be 1.6 mt for 2009 compared with 3.3 mt in 2008. Washington would have a 1.7 mt HG for 2009 compared with a 3.5 mt HG in 2008, and California would have a 1.8 mt HG for 2009 compared with 2.1 mt in 2008.

Under the Option 3 scenario, the following fishery management measures are anticipated to be required to constrain recreational fisheries to these levels:

- Oregon would have a five month season with a 25 fm depth restriction and a 6-rockfish bag limit.
- Washington would have a year-round season and a 10 rockfish bag limit

and fishing allowed at all depths (except a 20 fm depth restriction would be in effect from May 1 to Sept. 30th in three of four management areas).

- California would have a three month season in the Northern Management Area and a one-and-a-half month season in the North-Central Management Area North of Point Arena with a 20 fm depth restriction and a five month season in the North-Central Management Area South of Point Arena with a 30 fm depth restriction with a 10 fish bag limit in all areas (see Table 6).

Table 6: California Recreational Season Structure and Depth Restrictions under the 14 mt OY, Option 3 (1.8 mt yelloweye rockfish HG)

RCG SEASON BY REGION

Region	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
North Region	---	---	---	---	Open <20fm			---	---	---	---	---
North Central N. of Pt. Arena	---	---	---	---	---	<20fm---July 15		---	---	---	---	---
North Central S. of Pt. Arena	---	---	---	---	---	Open <30fm					---	---
South Central - Monterey	---	---	---	---	Open <40fm							---
South Central - Morro Bay	---	---	---	---	Open <40fm							---
South Region	---	---	Open < 60fm									

NOTES AND KEY:
RCG = Rockfish, cabezon, greenlings
--- = Closed to boat-based fishing for RCG
In the South Region, CA scorpionfish is open 12 months: 0-40 fm January-February, 0-60 fm in March-December.

California would have an increased percentage of the HG under Option 3, however, seasons and depth restrictions in Oregon and Washington would still be significantly more liberal than in California.

Option 1 Analysis

Use of the Option 1 catch-sharing arrangement under the Council's preferred yelloweye rockfish OY alternative (14 mt) would result in severe reductions in the catch allotted to California in the 2009 and 2010 seasons, and the required management measures to constrain catches would be extreme. In Oregon, the HG would be 1.8 mt for 2009 compared with 3.3 mt in 2008. Washington would have a 1.7 mt HG for 2009 compared with a 3.5 mt HG in 2008, and California would have only 1.1 mt HG for 2009 compared with 2.1 mt in 2008.

Under the Option 1 scenario, the following fishery management measures are anticipated to be required to constrain recreational fisheries to these levels:

- Oregon would have a year-round season with a 30 fm depth restriction

and a 6 fish bag limit.

- Washington would have a year-round season and a 10 rockfish bag limit and fishing allowed at all depths (except a 20 fm depth restriction would be in effect from May 1 to Sept. 30th in three of four management areas).
- California would have only a two month season in the Northern Management Area and a one month season in the North-Central Management Area North of Pt. Arena with a 20 fm and a 4 month season in the North-Central Management Area South of Point Arena with a 30 fm depth restriction. A 10 fish bag limit would remain in effect in all areas (see Table 7).

Table 7: California Recreational Season Structure and Depth Restrictions under the 14 mt OY, Option 1 (1.2 mt HG)

RCG SEASON BY REGION

Region	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
North Region	---	---	---	---	Open <20fm		---	---	---	---	---	---
North Central N. of Pt. Arena	---	---	---	---	---	<20fm	---	---	---	---	---	---
North Central S. of Pt. Arena	---	---	---	---	---	Open <30fm				---	---	---
South Central - Monterey	---	---	---	---	Open <40fm							---
South Central - Morro Bay	---	---	---	---	Open <40fm							---
South Region	---	---	Open < 60fm									

NOTES AND KEY:
RCG = Rockfish, cabezon, greenlings
--- = Closed to boat-based fishing for RCG
In the South Region, CA scorpionfish is open 12 months: 0-40 fm January-February, 0-60 fm in March-December.

Revisitation of Catch Sharing Arrangements with Commercial Sectors

The previous discussions of catch sharing options only considered evaluation of options *within* the recreational sector to derive the state recreational Harvest Guidelines. If the Council considers re-evaluation of catch-sharing *among all sectors*, the approaches of the three catch sharing options described above would be used to determine the proportions of the OY by sector that are applied to the entire OY (after removing 6 mt for the "unchangeables" described above). This "all sector" approach would result in different percentages of the OY being used to set the recreational HGs than those provided in Tables 3-5.

The recreational harvest guidelines resulting from the application of the three catch sharing options described above to reapportion the OY among recreational and commercial sectors assuming a 14 mt OY are shown in Table 8. Under the "Rec Only" Catch-Sharing columns of Table 6 the commercial harvest guidelines

remain the same and only the portion of the 5.1 mt recreational HG given to each state's recreational fishery varies.

Comparison of harvest guidelines between "Rec Only" and "All Sectors" columns provides insight into the implications of only applying catch sharing rules to the recreational HGs as opposed to applying them to the sharing of the entire OY. The harvest guidelines in Option 1 do not differ between the "Rec Only" and "All Sectors" columns since this is the status quo catch sharing option and the catch sharing percentages for each sector do not differ between the columns. The harvest guidelines for Option 3 decrease greatly for the directed open access fishery (.98 mt) and the increase of all other sectors varies from .02 to .43 mt in the "All Sectors" Catch-Sharing column. The decrease in the open access fishery harvest guideline for Option 3 under the "All Sectors" Catch-Sharing will require shallower depth restrictions and severely decreased trip limits to stay within the harvest guideline and provide year round fishing opportunity.

While the comparison of the harvest guidelines for "Rec Only" Catch-Sharing to "All Sectors" Catch-Sharing bears out the implications for each sector under the catch sharing options, the Council may propose additional ways of sharing the yelloweye rockfish catch in the 2009-2010 season.

Table 8. Yelloweye rockfish Harvest Guidelines by sector for the 14 mt Council-preferred 2010 OY alternative for each of the three catch-sharing options applied to recreational HG sharing (Rec Only Catch-Sharing) and applied to the OY apportioning catch between all sectors (All Sectors Catch-Sharing).

	Harvest Guideline in Metric Tons					
	Rec Only Catch-Sharing			All Sectors Catch-Sharing		
Sector	Option 1 2007 HG	Option 2 2007 Re-Projection.	Option 3 2006 HG	Option 1 2007 HG	Option 2 2007 Re-Projection	Option 3 2006 HG
LE Trawl Non-Whiting	0.06	0.06	0.06	0.06	0.05	0.22
LE Trawl-Whiting	0.00	0.00	0.00	0.00	0.00	0.22
OA: Directed	1.40	1.40	1.40	1.40	1.32	0.34
LE Fixed Gear	1.34	1.34	1.34	1.34	1.26	1.40
Rec: WA	2.04	1.86	1.75	2.04	1.92	1.96
Rec: OR	1.93	1.75	1.60	1.93	1.81	1.79
Rec: CA	1.23	1.59	1.85	1.23	1.64	2.07
WA-OR-CA Rec Subtotal	5.20	5.20	5.20	5.20	5.37	5.82
Sub-Total	8.00	8.00	8.00	8.00	8.00	8.00
"Unchangeables"	6.00	6.00	6.00	6.00	6.00	6.00
Total	14.0	14.0	14.0	14.0	14.0	14.0