GROUNDFISH MANAGEMENT TEAM REPORT ON FISHERIES IN 2015-2016 AND BEYOND: MANAGEMENT MEASURES RANGE OF ALTERNATIVES

Introduction and Overarching Discussion

This report includes updated catch risk tables and includes the selected species scorecard for the current year, which we would have produced in the inseason statement had time allowed. First, we make some overarching comments and a recommendation.

As highlighted in our Agenda Item H.4 GMT reports, some fundamental questions have surfaced during discussions of "catch risk" and stock complexes. As noted there, we see the need for more clarity on certain aspects of the law and the science of overfishing, especially in the context of the stock complexes. This clarity would benefit both our analytical work and the policy deliberations at the Council. We therefore recommend that the issue be looked at over the remainder of this 2015-16 process, to the extent possible.

These fundamental issues underlie many of the topics we hear discussed by the Council and its advisors, including the use of harvest guidelines and questions on the appropriateness of directing management measures at stocks within complexes. Even with the selected species scorecard presented here, we have heard concerns that such efforts are leading us down the road of "individual management" for every stock. We have undertaken such assessments of catch risk for the very reason of helping to answer the question of which stocks need individual attention. Yet we do not think this question is easily answerable, until there is a more commonly held understanding of the proportionality between management response and overfishing risk. We cannot say we have a consensus view at the GMT or staff level.

To achieve better clarity, the desire to have flexibility in stock complex management and elsewhere needs to be connected to the Council's primary responsibility under National Standard 1 of preventing overfishing. As one way of doing this, the team saw similarities in the flowchart that the Council considered for responding to status determination in the data moderate assessments (Agenda Item H.2.b, Supplemental NWFSC Powerpoint (Hastie), March 2013). Overfishing is another type of status determination that is made on catch compared to overfishing levels (OFLs) and allowable biological catches (ABCs). And in fact, some on the team had the impression that the flowchart already applied to this type of status determination. Others thought the flowchart and discussions around it were focused on the need for rebuilding data moderate stocks and that the overfishing aspect was not directly discussed. Either way, the team wishes to highlight the commonalities between the two and thinks it would be very helpful for such a "flowchart" to be produced and discussed relative to catch risk and overfishing. Such discussions could consider questions about the need to take management action in the following circumstances:

1) The primary range of the species is outside of the region managed under the West Coast Groundfish Fishery Management Plan (FMP).
2) Action is not necessary in a given management area within the FMP where the species is rare or does not occur.
3) Action has recently been taken to reduce mortality below the established ABC.

4) Additional data is available for a full assessment.
5) The species in question is a healthy stock subject to the mixed stock exception.

These circumstances are illustrative of what has popped up in GMT discussions yet we do not suggest this to be the exhaustive list or necessarily what a first cut effort would attempt to clarify.

Recommendation: Request that appropriate staff--NWFSC, SSC, Council staff, GMT--develop a flowchart for thinking about the overfishing risk and appropriate management response with data moderate and data poor stocks.

Considerations for Management of Stocks for which Mortality has Regularly Exceeded the ABC or OFL of a Component Stock of a Complex

The risk analysis conducted with regards to stock complexes at the September Council meeting (Agenda Item G.8.b, Supplemental GMT Report 5, September 2013, Appendix B) was updated to reflect the 2015 OFLs and ABCs selected by the Council under H.6. The results are provided in Agenda Item H.6. The 2012 groundfish mortality estimates from the West Coast Groundfish Observer Program (WCGOP) were added to the analysis. In addition, fish identified as blackspotted rockfish were added to the estimates of rougheye rockfish to provide a direct comparison to the rougheye/blackspotted rockfish OFL. This OFL reflects categorization of the rougheye rockfish assessment as a category 2 stock assessment as recommended by the Scientific and Statistical Committee (SSC), due to the co-occurrence of the two species. Lastly, the proportion of rougheye/shortraker rockfish was calculated using the average proportion of the catch of each species from 2004-2012, then added to the estimates for each species. This was done to provide total estimates of mortality for comparison to respective ABCs and OFLs. A similar comparison was conducted for each complex component species and the results are provided in Tables 4 to 12.

The mortality estimates for overfished species and non-overfished species for 2011 and 2012, subject to individual management were also compared to their respective ABC and OFL, as well as ACL for overfished species, the results of which are provided in Table 13 and Table 14, respectively. The purpose of providing this information under this agenda item is to identify stocks for which management actions may be needed to address conservation concerns resulting from overages. As such, in tables where mortality from multiple timeframes are analyzed, particular attention should be paid to the comparisons of ABCs and OFLs to the average mortality in 2011 and 2012, which better reflects mortality under current management than longer time series that combine data from individual fishing quota (IFQ) and pre-IFQ periods.
Annual groundfish mortality reports will be reviewed each year to monitor catch relative to the OFL and ABC values. Using this information, stocks can be prioritized for assessment to determine whether overharvest has continued or the status of the stock has been affected, respectively. The GMT will thoroughly analyze various management measures for selected species identified as at risk of overfishing. These analyses will evaluate various measures, some that may be applied to species that remain within a complex, and others that may require removing a species from the complex.

Selected Species Scorecard

At the June 2012 meeting, the Council requested the GMT provide landings information by

sector for aurora, rougheye, shortraker, China, copper, and quillback rockfish under the inseason agenda item (see Council meeting minutes at http://tinyurl.com/ldaaoqo). The purpose of presenting these data is to gain a better understanding of how catch accrues by sector throughout the year for these species. This information is not intended to inform inseason action. Per the Council request, the GMT prepared a landings report (Table 1,**Error! Reference source not found.**, and Table 3) of these selected species. The query date for these tables was October 27, 2013.

Originally, landings information was to be summarized from existing automated database reports. However, the GMT went a step further, and together with the Pacific States Marine Fisheries Commission (PSMFC), Pacific Fishery Management Council (PFMC) and National Marine Fisheries Service (NMFS) staff, developed a database reporting tool housed within PacFIN, which updates regularly to inform this data request. The current report includes landings estimates from the shoreside commercial fisheries (PacFIN VDRFD table), retained and discarded catch estimates as of the current query date, in the at-sea sectors (via the newly revised NORPAC 4900 Species Comp. Table in PacFIN), retained and dead discard estimates from recreational fisheries (via RecFIN).

Three tables are presented: Table 1 summarizes catch by species and management area, while **Error! Reference source not found.** summarizes catch by species and sector, only for the area north of 40°10' N. latitude, and **Error! Reference source not found.** does the same for the area south of 40°10' N. latitude. Footnotes in Table 1 include the anticipated 2015 component overfishing levels (OFLs) to inform how current catches relate to potential future harvest specifications (i.e., 2015). Landings data were better than 90 percent complete through August in Washington, September in Oregon, and July in California, at the time of this query (October 27, 2013). Component OFLs were taken from the 2013-14 Biennial Harvest Specifications Final Environmental Impact Statement. The estimates given here may not match exactly with every sector estimate obtained separately from independent databases, due to reporting lag and data capture date.

It is important to note that since OFLs are set for stock complexes, rather than for individual stocks within a complex, the Scientific and Statistical Committee recommends against using OFL contribution values to evaluate whether overfishing is occurring for component stocks (see http://tinyurl.com/kz7p639). In addition, the NMFS pointed out in Agenda Item H.4.b, Supplemental NMFS Report, November 2013, that although "the Minor Slope North and Minor Slope South complexes are divided at 40° 10' N. latitude, combining northern and southern individual stock contributions to the OFL is more informative when determining management performance of these stocks coastwide (Agenda Item F.8.b, Supplemental SSC Report, June 2013)".

Table 1. Catch estimates of selected species identified at the June 2012 PFMC meeting. Estimates include commercial landings for shoreside fisheries and total catch for at-sea sectors for 2013. This table also includes catches for the recreational sector (landed and discarded catch). This information is aggregated by species, complex and management area. For informational purposes; not intended for inseason Council action. Query date: October 27, 2013.

Species	Complex	Mgmt Area	2013 Sum of Catch	2013 Complex OFL (mt)	% of OFL Contribution	2011 WCGOP Annual Discard (mt)[a/]
Aurora Rockfish[b/]	Minor Slope	North 40°10'	11.36	15.4	73.8%	2.08
		South 40°10'	2.63	26.1	10.1%	1.1
China Rockfish	Minor NS	North 40°10'	12.76	9.8	130.2%	0.11
		South 40°10'	6.57	16.6	39.6%	1.12
Copper Rockfish	Minor NS	North 40°10'	7.62	26	29.3%	0.05
		South 40°10'	57.88	141.5	40.9%	0.12
Quillback Rockfish	Minor NS	North 40°10'	9.7	7.4	131.1%	0.05
		South 40°10'	0.64	5.4	11.9%	0
Rougheye Rockfish[c/]	Minor Slope	North 40°10'	96.88	71.1	136.3%	35.97
		South 40°10'	0	0.4	0.0%	0.08
Shortraker Rockfish	Minor Slope	North 40°10'	19.95	18.7	106.7%	0.34
		South 40°10'	0	0.1	0.0%	
Shortraker/Rougheye Rockfish	Minor Slope	North 40°10'	0	NA	NA	0.38

a/ Shoreside discard from the 2011 WCGOP groundfish mortality report.
b/ Aurora rockfish projected 2015 OFLs (updated base on Agenda Item H.6.a Attachment 1, November 2013) are 17.4 mt north of 40° 10' and 74.3 mt south of 40° 10'; percentage of 2015 OFLs (updated base on Agenda Item H.6.a Attachment 1, November 2013) are 57 percent and 5 percent, respectively.
c/ Rougheye rockfish projected 2015 OFLs (updated base on Agenda Item H.6.a Attachment 1, November 2013) are 201.9 mt north of 40° 10' and 4.1 mt south of 40° 10'; percentage of 2015 OFLs (updated base on Agenda Item H.6.a Attachment 1, November 2013) are 35 percent and 2 percent respectively.

Table 2 Catch estimates of selected species, in the management area North of 40°10' N. latitude only, identified at the June 2012 PFMC meeting. Estimates include commercial landings for shoreside fisheries and total catch for at-sea sectors for 2013. This table also includes catches for the recreational sector (landed and discarded catch). This information is aggregated by species, and sector. For informational purposes; not intended for inseason Council action. Query date: October 27, 2013.

Species	Sector	Sum of Catch	% of Fishery		2011 WCGOP Annual Discard (mt)
Aurora Rockfish	At-sea Hake CP	0	0.0%		0.04
	At-sea Hake MS	0	0.0%		
	IFQ Fixed Gear	0	0.0%		0
	IFQ Trawl Gear	11.17	98.4%		1.9
	Incidental/misc.	0.13	1.1%		0.12
	Non-nearshore Fixed Gear	0.01	0.1%		0.02
	Shoreside Hake	0.04	0.4%		0
	Treaty	0	0.0%		0
China Rockfish	CA Recreational	0.97	7.6%		
	Incidental/misc.	0.1	0.8%		
	Nearshore Fixed Gear	5.34	41.9%		0.11
	OR Recreational	3.11	24.4%		
	WA Recreational	3.23	25.3%		
Copper Rockfish	CA Recreational	1.74	22.8%		
	Incidental/misc.	0.01	0.1%		
	Nearshore Fixed Gear	1.04	13.6%		0.05
	OR Recreational	3.7	48.5%		
	WA Recreational	1.14	14.9%		
Quillback Rockfish	CA Recreational	1.54	15.9%		
	IFQ Trawl Gear	0.08	0.8%		0.03
	Incidental/misc.	0.01	0.1%		
	Nearshore Fixed Gear	1.74	18.0%		0.02
	OR Recreational	5.26	54.3%		
	WA Recreational	1.06	10.9%		

Table 2. Continued.

Species	Sector	Sum of Catch	% of Fishery		2011 WCGOP Annual Discard (mt)
Rougheye Rockfish	At-sea Hake CP	6.79	7.0%		26.81
	At-sea Hake MS	6.25	6.5%		
	IFQ Fixed Gear	1.77	1.8%		8.04
	IFQ Trawl Gear	47.35	48.9%		0.04
	Incidental/misc.	0.76	0.8%		0.01
	Nearshore Fixed Gear	0	0.0%		0
	Non-nearshore Fixed Gear	27.39	28.3%		0.99
	Shoreside Hake	0.06	0.1%		0
	Treaty	6.5	6.7%		0.08
Shortraker Rockfish	At-sea Hake CP	0.02	0.1%		0.03
	At-sea Hake MS	0.01	0.1%		
	IFQ Fixed Gear	0.03	0.2%		0.21
	IFQ Trawl Gear	17.61	88.3%		0.03
	Incidental/misc.	0.21	1.1%		0
	Non-nearshore Fixed Gear	1.42	7.1%		0.07
	Shoreside Hake	0.22	1.1%		0
	Treaty	0.43	2.2%		0
Shortraker/Rougheye Rockfish	At-sea Hake CP	0			0.01
	IFQ Fixed Gear	0			0.22
	IFQ Trawl Gear	0			0
	Non-nearshore Fixed Gear	0			0.15

Table 3. Catch estimates of selected species, in the management area South of 40°10' N. latitude only, identified at the June 2012 PFMC meeting. Estimates include commercial landings for shoreside fisheries and total catch for at-sea sectors for 2013. This table also includes catches for the recreational sector (landed and discarded catch). This information is aggregated by species, and sector. For informational purposes; not intended for inseason Council action. Query date: October 27, 2013.

Species	Sector	Sum of Catch	% of Catch		2011 WCGOP Annual Discard (mt)
Aurora Rockfish	IFQ Fixed Gear	0.01	0.4%		0
	IFQ Trawl Gear	2.55	97.0%		0.75
	Non-nearshore Fixed Gear	0.07	2.7%		0.35
China Rockfish	CA Recreational	6.17	93.9%		
	Incidental/misc.	0.02	0.3%		0
	Nearshore Fixed Gear	0.38	5.8%		1.12
Copper Rockfish	CA Recreational	55.71	96.3%		
	Incidental/misc.	0.51	0.9%		0
	Nearshore Fixed Gear	1.65	2.9%		0.12
Quillback Rockfish	CA Recreational	0.6	95.2%		
	Nearshore Fixed Gear	0.03	4.8%		0
Rougheye Rockfish	IFQ Trawl Gear	0	0.0%		0
	Non-nearshore Fixed Gear				0.08

Table 4. Coastwide analysis of metrics that may be used to evaluate the risk of overfishing for species in complexes identified to exceed a component ABC or OFL in each complex. Metrics include (1) average annual catch (2011 and 2012, 2009-2012, and 2004-2012) as a percent of the preliminary preferred 2015 component ABC and the 2015 component OFL and (2) percent of years (N = 9 years) that catch would have exceeded the 2015 component OFL or the 2015 component ABC.

Species	2015 OFL	2015 ABC	Percent ABC 2011-2012	Percent ABC 2009-2012	Percent ABC 2004-2012	Percent Years Over ABC 2004-2012	Percent OFL 2011-2012	Percent OFL 2009-2012	Percent OFL 2004-2012	Years Over OFL 2004-2012
Aurora	91.7	87.3	42%	52%	63%	0%	40%	50%	60%	0%
Blackgill	134.7	122.6	147%	136%	105%	56%	133%	124%	96%	56%
Rougheye	206	188.08	130%	133%	109%	67%	119%	122%	99%	67%
Shortraker	18.8	15.7	194%	203%	176%	78%	162%	170%	147%	78%
Tiger**	1	0.8	153%	118%	131%	67%	123%	95%	105%	67%
Vermilion	279	232.7	101%	84%	91%	33%	84%	70%	76%	33%
Black and yellow	27.5	23	95%	109%	79%	33%	79%	91%	66%	33%
China	59.8	54.597	57%	59%	53%	0%	52%	54%	48%	0%
Grass	60.3	50.2	56%	45%	39%	0%	47%	38%	33%	0%
Copper	303.7	277.28	30%	27%	24%	0%	28%	24%	21%	0%
Olive	224.9	187.6	15%	13%	20%	0%	13%	11%	17%	0%
Quillback	12.8	10.7	120%	113%	133%	89%	101%	94%	111%	89%
Treefish	13.4	11.1	118%	96%	75%	22%	98%	80%	62%	22%
Curlfin sole	8.2	5.7	31%	54%	169%	56%	21%	38%	117%	56%
Flathead sole	35	24.3	36%	32%	114%	33%	25%	22%	79%	33%

Table 5. Metrics that may be used to evaluate the risk of overfishing for Minor Slope Rockfishes Rockfish north of 40°10′ N latitude. Metrics include (1) average annual catch (2011 and 2012, 2009-2012, and 2004-2012) as a percent of the 2015 component ABC and the 2015 component OFL, (2) percent of years (N = 9 years) that catch would have exceeded the preliminary preferred 2015 component OFL or the 2015 component ABC, and (3) percent contribution of the management-unit component OFL (i.e., north or south of 40°10′ N latitude) to the coastwide component OFL. Shaded areas represent potential areas of concern (i.e., higher risk of overfishing).

Species	2015 OFL	2015 ABC	Percent ABC 2011-2012	Percent ABC 2009-2012	Percent ABC 2004-2012	Percent Years Over ABC 2004-2012	Percent OFL 2011-2012	Percent OFL 2009-2012	Percent OFL 2004-2012	Years Over OFL 2004-2012	Percent Coastwide OFL
Aurora	17.4	16.6	123%	195%	172%	78%	117%	186%	164%	78%	19%
Bank**	17.2	14.4	6%	6%	10%	0%	5%	5%	8%	0%	3%
Blackgill**	4.7	3.9	175%	207%	183%	89%	145%	172%	152%	78%	3%
Redbanded	45.3	37.7	91%	91%	91%	22%	76%	75%	76%	0%	81%
Rougheye	201.9	184.32	130%	134%	110%	67%	119%	123%	100%	56%	98%
Sharpchin	214.5	178.9	6%	5%	6%	0%	5%	4%	5%	0%	74%
Shortraker	18.7	15.6	195%	198%	173%	78%	162%	165%	144%	78%	99%
Yellowmouth	192.4	160.5	3%	3%	3%	0%	2%	2%	3%	0%	100%
Splitnose	939	897.7	4%	8%	10%	0%	4%	8%	10%	0%	34%
Pacific Ocean Perch*	844	807	7%	14%	14%	0%	7%	13%	14%	0%	100%

*Managed outside of complex

**Trace amount caught; i.e., the average catch does not round to 0.1 mt.

Table 6. Metrics that may be used to evaluate the risk of overfishing for Minor Slope Rockfish south of 40°10′ N latitude. Metrics include (1) average annual catch (2011 and 2012, 2009-2012, and 2004-2012) as a percent of the 2015 component ABC and the 2015 component OFL, (2) percent of years (N = 9 years) that catch would have exceeded the 2015 component OFL or the 2015 component ABC, and (3) percent contribution of the management-unit component OFL (i.e., north or south of 40°10′ N latitude) to the coastwide component OFL. Shaded areas represent potential areas of concern (i.e., higher risk of overfishing).

Species	2015 OFL	2015 ABC	Percent ABC 2011-2012	Percent ABC 2009-2012	Percent ABC 2004-2012	Percent Years Over ABC 2004-2012	Percent OFL 2011-2012	Percent OFL 2009-2012	Percent OFL 2004-2012	Years Over OFL 2004-2012	Percent Coastwide OFL
Aurora	74.3	70.7	23%	19%	37%	0%	22%	18%	35%	0%	81%
Bank	503.2	459.4	5%	7%	11%	0%	5%	6%	10%	0%	97%
Blackgill	137	131	115%	121%	93%	56%	126%	116%	89%	44%	97%
Redbanded	10.4	8.7	13%	21%	27%	0%	11%	17%	23%	0%	19%
Rougheye**	4.1	3.8	129%	85%	53%	11%	118%	78%	49%	11%	2%
Sharpchin	76.4	69.8	1%	2%	2%	0%	0%	2%	2%	0%	26%
Shortraker**	0.1	0.1	0%	1044%	630%	44%	0%	1044%	630%	44%	1%
Yellowmouth**	0.8	0.7	4%	3%	2%	0%	3%	3%	1%	0%	0%
Splitnose*	1,794	1,715	1%	5%	8%	0%	1%	4%	8%	0%	66%
Pacific ocean perch**	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0%

*Managed outside of complex

**Trace amount caught; i.e., the average catch does not round to 0.1 mt.

Table 7. Metrics that may be used to evaluate the risk of overfishing for Minor Shelf Rockfish north of 40°10′ N latitude. Metrics include (1) average annual catch (2011 and 2012, 2009-2012, and 2004-2012) as a percent of the 2015 component ABC and the 2015 component OFL, (2) percent of years (N = 9 years) that catch would have exceeded the 2015 component OFL or the 2015 component ABC, and (3) percent contribution of the management-unit component OFL (i.e., north or south of 40°10′ N latitude) to the coastwide component OFL. Shaded areas represent potential areas of concern (i.e., higher risk of overfishing).

Species	2015 OFL	2015 ABC	Percent ABC 2011-2012	Percent ABC 2009-2012	Percent ABC 2004-2012	Percent Years Over ABC 2004-2012	Percent OFL 2011-2012	Percent OFL 2009-2012	Percent OFL 2004-2012	Years Over OFL 2004-2012	Percent Coastwide OFL
Bronzespotted**	0	0	NA	NA	NA	NA	NA	NA	NA	22%	0%
Bocaccio	284	236.9	1%	1%	2%	0%	1%	1%	2%	0%	25%
Chameleon**	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0%
Chilipepper	128.2	106.9	2%	8%	13%	0%	1%	7%	11%	0%	7%
Cowcod**	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0%
Dusky**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dwarf-red**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Flag	0.1	0.1	0%	11%	10%	0%	0%	11%	10%	0%	0%
Freckled**	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0%
Greenblotched	1.3	1.1	0%	0%	0%	0%	0%	0%	0%	0%	5%
Greenspotted	6.1	5.1	2%	3%	3%	0%	2%	2%	3%	0%	7%
Greenstriped	1,282	1,170	2%	1%	2%	0%	2%	1%	2%	0%	85%
Halfbanded**	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0%
Harlequin**	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0%
Honeycomb**	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0%
Mexican**	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0%

**Trace amount caught; i.e., the average catch does not round to 0.1 mt.

Table 7. (Continued)

Species	2015 OFL	2015 ABC	Percent ABC 2011-2012	Percent ABC 2009-2012	Percent ABC 2004-2012	Percent Years Over ABC 2004-2012	Percent OFL 2011-2012	Percent OFL 2009-2012	Percent OFL 2004-2012	Years Over OFL 2004-2012	Percent Coastwide OFL
Pink**	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0%
Pinkrose**	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0%
Puget Sound**	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0%
Pygmy**	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0%
Redstripe	269.9	225.1	4%	4%	3%	0%	4%	3%	2%	0%	100%
Rosethorn	12.9	10.8	46%	43%	40%	0%	38%	36%	33%	0%	86%
Rosy	3	2.5	3%	3%	4%	0%	2%	3%	4%	0%	6%
Silvergray	159.4	133	2%	2%	6%	0%	1%	1%	5%	0%	100%
Speckled**	0.2	0.1	0%	0%	0%	0%	0%	0%	0%	0%	1%
Squarespot**	0.2	0.1	0%	0%	0%	0%	0%	0%	0%	0%	2%
Starry**	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0%
Stripetail	40.4	33.7	7%	6%	13%	0%	6%	5%	11%	0%	63%
Swordspine**	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0%
Tiger	1	0.8	133%	101%	114%	44%	107%	81%	91%	44%	100%
Vermilion	9.7	8.1	198%	203%	209%	100%	166%	169%	175%	89%	3%
Yellowtail*	12281	11213	6%	7%	6%	0%	6%	6%	5%	0%	100%

*Managed outside of complex

**Trace amount caught; i.e., the average catch does not round to 0.1 mt.

Table 8. Metrics that may be used to evaluate the risk of overfishing for Minor Shelf Rockfish south of 40°10′ N latitude. Metrics include (1) average annual catch (2011 and 2012, 2009-2012, and 2004-2012) as a percent of the 2015 component ABC and the 2015 component OFL, (2) percent of years (N = 9 years) that catch would have exceeded the preliminary preferred 2015 component OFL or the 2015 component ABC, and (3) percent contribution of the management-unit component OFL (i.e., north or south of 40°10′ N latitude) to the coastwide OFL. Shaded areas represent potential areas of concern (i.e., higher risk of overfishing).

Species	2015 OFL	2015 ABC	Percent ABC 2011-2012	Percent ABC 2009-2012	Percent ABC 2004-2012	Percent Years Over ABC 2004-2012	Percent OFL 2011-2012	Percent OFL 2009-2012	Percent OFL 2004-2012	Years Over OFL 2004-2012	Percent Coastwide OFL
Bronzespotted	3.6	3	2%	1%	2%	0%	2%	1%	1%	0%	100%
Bocaccio*	874	836	15%	11%	10%	0%	14%	11%	9%	0%	75%
Chameleon**	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0%
Chilipepper*	1703	1628	19%	19%	13%	0%	19%	19%	12%	0%	93%
Cowcod*	11	9	12%	9%	9%	0%	10%	7%	7%	0%	100%
Dusky**	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0%
Dwarf-red**	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0%
Flag	23.4	19.5	59%	44%	41%	0%	49%	37%	34%	0%	100%
Freckled**	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0%
Greenblotched	23.1	19.3	6%	4%	5%	0%	5%	3%	4%	0%	95%
Greenspotted	80.3	73.3	26%	23%	22%	0%	24%	21%	20%	0%	93%
Greenstriped	235.1	214.7	1%	1%	2%	0%	1%	1%	1%	0%	15%
Halfbanded**	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0%
Harlequin**	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0%
Honeycomb	9.9	8.2	87%	69%	55%	0%	72%	57%	45%	0%	100%
Mexican	5.1	4.2	0%	0%	4%	0%	0%	0%	3%	0%	100%
Pink	2.5	2.1	19%	9%	6%	0%	16%	8%	5%	0%	100%

*Managed outside of complex

**Trace amount caught; i.e., the average catch does not round to 0.1 mt.

Table 8. (Continued)

Species	2015 OFL	2015 ABC	Percent ABC 2011-2012	Percent ABC 2009-2012	Percent ABC 2004-2012	Percent Years Over ABC 2004-2012	Percent OFL 2011-2012	Percent OFL 2009-2012	Percent OFL 2004-2012	Years Over OFL 2004-2012	Percent Coastwide OFL
Pinkrose**	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0%
Puget Sound**	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0%
Pygmy**	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0%
Redstripe	0.5	0.4	0%	7%	5%	0%	0%	6%	4%	0%	4%
Rosethorn	2.1	1.8	17%	12%	15%	0%	14%	11%	13%	0%	41%
Rosy	44.5	37.1	17%	15%	14%	0%	14%	13%	12%	0%	22%
Silvergray	0.5	0.4	0%	0%	0%	0%	0%	0%	0%	0%	71%
Speckled	39.4	32.8	27%	24%	14%	0%	23%	20%	12%	0%	99%
Squarespot	11.1	9.2	31%	27%	25%	0%	26%	22%	21%	0%	100%
Starry	62.6	52.2	45%	24%	11%	0%	37%	20%	9%	0%	61%
Stripetail	23.6	19.7	44%	52%	44%	0%	37%	43%	37%	0%	100%
Swordspine	14.2	11.9	1%	0%	0%	0%	1%	0%	0%	0%	93%
Tiger**	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0%
Vermilion	269.3	224.6	97%	80%	87%	33%	81%	67%	72%	11%	97%
Yellowtail	1064.4	887.7	6%	7%	16%	0%	5%	6%	13%	0%	100%

**Trace amount caught; i.e., the average catch does not round to 0.1 mt.

Table 9. Metrics that may be used to evaluate the risk of overfishing for Minor Nearshore Rockfish north of 40°10′ N latitude. Metrics include (1) average annual catch (2011 and 2012, 2009-2012, and 2004-2012) as a percent of the 2015 component ABC and the 2015 component OFL, (2) percent of years (N = 9 years) that catch would have exceeded the 2015 component OFL or the 2015 component ABC, and (3) percent contribution of the management-unit component OFL (i.e., north or south of 40°10′ N latitude) to the coastwide OFL. Shaded areas represent potential areas of concern (i.e., higher risk of overfishing).

Species	2015 OFL	2015 ABC	Percent ABC 2011-2012	Percent ABC 2009-2012	Percent ABC 2004-2012	Percent Years Over ABC 2004-2012	Percent OFL 2011-2012	Percent OFL 2009-2012	Percent OFL 2004-2012	Years Over OFL 2004-2012	Percent Coastwide OFL
Black and yellow**	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0%
China	8.2	7.5	219%	197%	178%	100%	200%	180%	162%	100%	14%
Gopher**	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0%
Grass	0.7	0.5	193%	151%	190%	67%	138%	108%	136%	67%	1%
Kelp**	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0%
Blue	59.7	51.9	85%	76%	87%	11%	73%	66%	76%	11%	18%
Brown	*2.0*	1.8	79%	58%	54%	0%	57%	53%	49%	0%	1%
Calico**	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0%
Copper	7.4	6.8	124%	123%	123%	78%	113%	112%	112%	78%	2%
Olive	0.3	0.2	295%	247%	149%	44%	197%	165%	100%	44%	0%
Quillback	7.4	6.2	176%	161%	196%	100%	148%	135%	164%	100%	58%
Treefish	0.2	0.1	0%	0%	0%	0%	0%	0%	0%	0%	1%

**Trace amount caught; i.e., the average catch does not round to 0.1 mt.

Table 10. Metrics that may be used to evaluate the risk of overfishing for Minor Nearshore Rockfish south of 40°10′ N latitude. Metrics include (1) average annual catch (2011 and 2012, 2009-2012, and 2004-2012) as a percent of the 2015 component ABC and the 2015 comonent OFL, (2) percent of years (N = 9 years) that catch would have exceeded the 2015 component OFL or the 2015 component ABC, and (3) percent contribution of the management-unit component OFL (i.e., north or south of 40°10′ N latitude) to the coastwide OFL. Shaded areas represent potential areas of concern (i.e., higher risk of overfishing).

Species	2015 OFL	2015 ABC	Percent ABC 2011-2012	Percent ABC 2009-2012	Percent ABC 2004-2012	Percent Years Over ABC 2004-2012	Percent OFL 2011-2012	Percent OFL 2009-2012	Percent OFL 2004-2012	Years Over OFL 2004-2012	Percent Coastwide OFL
Black and yellow	27.5	23	88%	105%	77%	33%	73%	88%	64%	11%	100%
China	51.6	47.1	31%	37%	33%	0%	28%	34%	30%	0%	86%
Gopher	173.6	162.9	54%	58%	46%	0%	50%	54%	43%	0%	100%
Grass	59.6	49.7	55%	44%	38%	0%	46%	37%	32%	0%	99%
Kelp	27.7	23.1	44%	36%	26%	0%	37%	30%	22%	0%	100%
Blue	263.5	233	23%	22%	57%	22%	21%	20%	51%	22%	82%
Brown	171.2	156.31	67%	63%	53%	0%	61%	57%	48%	0%	99%
Calico**	0	0	NA	NA	NA	NA	NA	NA	NA	NA	0%
Copper	296.3	270.52	28%	24%	21%	0%	25%	22%	19%	0%	98%
Olive	224.6	187.4	15%	13%	20%	0%	13%	11%	17%	0%	100%
Quillback	5.4	4.5	43%	46%	46%	0%	36%	38%	39%	0%	42%
Treefish	13.2	11	119%	97%	75%	22%	100%	81%	63%	11%	99%

**Trace amount caught; i.e., the average catch does not round to 0.1 mt.

Table 11. Metrics that may be used to evaluate the risk of overfishing for the Other Flatfish Complex. Metrics include (1) average annual catch (2011 and 2012, 2009-2012, and 2004-2012) as a percent of the 2015 component ABC and the 2015 component OFL and (2) percent of years (N = 9 years) that catch would have exceeded the 2015 component OFL or the 2015 component ABC. Shaded areas represent potential areas of concern (i.e., higher risk of overfishing).

Component Stock	2015 OFL	2015 ABC	Percent ABC 2011-2012	Percent ABC 2009-2012	Percent ABC 2004-2012	Percent Years Over ABC 2004-2012	Percent OFL 2011-2012	Percent OFL 2009-2012	Percent OFL 2004-2012	Years Over OFL 2004-2012
Butter sole	4.6	3.2	50%	39%	40%	11%	35%	27%	28%	0%
Curlfin sole	8.2	5.7	31%	54%	169%	56%	21%	38%	117%	44%
Flathead sole	35	24.3	36%	32%	114%	33%	25%	22%	79%	33%
Pacific sanddab	4801	3331.9	9%	11%	14%	0%	7%	8%	10%	0%
Rex sole	5609	4672	10%	11%	14%	0%	8%	10%	11%	0%
Rock sole	66.7	46.3	24%	18%	25%	0%	17%	12%	17%	0%
Sand sole	773.2	536.6	15%	13%	13%	0%	11%	9%	9%	0%

Table 12. Metrics that may be used to evaluate the risk of overfishing for the Other Roundfish Complex. Metrics include (1) average annual catch (2011 and 2012, 2009-2012, and 2004-2012) as a percent of the 2015 component ABC and the 2015 component OFL and (2) percent of years (N = 9 years) that catch would have exceeded the 2015 component OFL or the 2015 component ABC. Shaded areas represent potential areas of concern (i.e., higher risk of overfishing).

Component Stock	2015 OFL	2015 ABC	Percent ABC 2011-2012	Percent ABC 2009-2012	Percent ABC 2004-2012	Percent Years Over ABC 2004-2012	Percent OFL 2011-2012	Percent OFL 2009-2012	Percent OFL 2004-2012	Years Over OFL 2004-2012
Cabezon (WA)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Kelp Greenling	118.9	82.5	85%	66%	51%	0%	59%	46%	36%	0%

Table 13. Metrics that may be used to evaluate the risk of overfishing for the overfished species. Metrics include average annual catch (2011 and 2012) as a percent of the 2015 component ACL, 2015 component ABC, the 2015 component OFL. Shaded areas represent potential areas of concern (i.e., higher risk of overfishing).

Species	2015 OFL	2015 ABC	2015 ACL	Percent ABC 2011-2012	Percent OFL 2011-2012	Percent ACL 2011-2012
Bocaccio S. of $40^0$10' N. latitude	1,444	1380	349	9%	9%	36%
Canary	733	701	122	7%	7%	40%
Cowcod S. of $40^0$10' N. latitude	NA	NA	16	NA	NA	7%
Darkblotched	588	562	338	21%	20%	35%
Pacific Ocean Perch	842	805	158	7%	7%	37%
Petrale Sole	2,946	2816	2816	37%	35%	37%
Yelloweye	52	47	18	22%	20%	57%

Table 14. Metrics that may be used to evaluate the risk of overfishing for the non-overfished species. Metrics include average annual catch (2011 and 2012) as a percent of the 2015 component ABC and the 2015 component OFL. Shaded areas represent potential areas of concern (i.e., higher risk of overfishing).

Species	2015 OFL	2015 ABC	Percent ABC 2011-2012	Percent OFL 2011-2012
Arrowtooth Flounder	6,599	5497	47%	39%
Black Rockfish (OR-CA)	1,176	1124	48%	46%
Black Rockfish (WA)	421	402	57%	54%
Cabezon (CA)	161	154	40%	39%
Cabezon (OR)	49	47	101%	97%
California scorpionfish	119	114	75%	72%
Chilipepper S. of $40^0$10' N. latitude	1,703	1628	19%	19%
Dover Sole	66,871	63929	12%	11%
English Sole	12,092	11040	2%	2%
Lingcod N. of 42º N. latitude (OR & WA)	1,898	1814	38%	36%
Lingcod S. of 42º N. latitude (CA)	2,317	2115	13%	12%
Longnose skate	2,449	2341	45%	43%
Longspine Thornyhead (coastwide)	5,007	4171	23%	19%
Pacific Cod	3,200	2221	28%	19%
Sablefish (coastwide)	7,857	7173	84%	76%
Shortbelly	6,950	5789	0%	0%
Shortspine Thornyhead (coastwide)	3,203	2668	36%	30%
Splitnose S. of $40^0$10' N. latitude	1,794	1715	3%	3%
Starry Flounder	1,841	1534	1%	1%
Widow	4,137	3929	6%	6%
Leopard Shark	167.1	116	26%	18%