

**GROUND FISH MANAGEMENT TEAM (GMT) REPORT ON
 OVERFISHED SPECIES MORTALITY**

The Groundfish Management Team (GMT) discussed inseason issues at its February 2015 meeting in Seattle, Washington. Comments are provided in this report on increased 2013 yelloweye and canary rockfish mortality in the commercial nearshore fisheries and recent adjustments to surface discard mortality proportions.

Mortality of yelloweye and canary rockfish

The GMT reviewed and discussed the 2013 West Coast Groundfish Observer Program (WCGOP) Groundfish Mortality Report ([Somers et al., 2014](#)). Table 1 and Table 2 show the 2013 specifications and mortality levels for yelloweye and canary rockfish, respectively, for each sector. Mortality for both yelloweye and canary rockfish increased from 2012 ([Bellman et al., 2013](#)) to 2013 in the commercial nearshore fishery, and exceeded the nearshore fishery catch share in each year. For each species, the total 2013 estimated mortality was under their respective annual catch limits (annual catch limits [ACLs]; 7.3 mt lower for yelloweye, 72.9 mt lower for canary) as well as their respective non-trawl allocations. However, while the non-nearshore fishery was beneath their catch share for each species, the commercial fixed gear share was exceeded for both yelloweye and canary rockfish.

Table 1. Yelloweye rockfish fishing mortality (mt) relative to harvest specifications during 2013.

Description	2013 Specifications (mt)	2013 Mortality (mt)	Difference (percent in parentheses)
ACL	18.0	10.70	7.35 (59%)
Trawl ^{a/}	1.0	0.06	0.94 (6%)
Non-Trawl ^{a/}	11.2	9.25	1.95 (83%)
<i>Non-Nearshore fixed gear</i> ^{b/}	1.1	0.27	0.93 (25%)
<i>Nearshore fixed gear</i> ^{b/}	1.2	2.71	<1.51> (226%)
<i>Recreational</i> ^{/c}	8.9	6.27	2.63 (70%)

/a Specifications represent formal allocations specified in regulation.

/b Specifications represent catch shares which are informal sharing agreements recommended by the Council, which may be adjusted within the non-trawl allocation.

/c Specifications represent harvest guidelines, specified in regulation, which may be adjusted within the non-trawl allocation.

Table 2. Canary rockfish fishing mortality (mt) relative to harvest specifications during 2013.

Description	2013 Specifications (mt)	2013 Mortality (mt)	Difference (percent in parentheses)
ACL	116	43.11	72.89 (37%)
Trawl ^{a/}	52.5	10.86	41.64 (21%)
Non-Trawl ^{a/}	46.0	27.84	18.16 (61%)
<i>Non-Nearshore fixed gear</i> ^{b/}	3.5	1.00	2.50 (29%)
<i>Nearshore fixed gear</i> ^{b/}	6.2	10.50	<4.3> (169%)
<i>Recreational</i> ^{c/}	36.3	16.34	19.96 (45%)

/a Specifications represent formal allocations specified in regulation.

/b Specifications represent catch shares which are informal sharing agreements recommended by the Council, which may be adjusted within the non-trawl allocation.

/c Specifications represent harvest guidelines, specified in regulation, which may be adjusted within the non-trawl allocation.

Recent Adjustments to Commercial Surface Discard Mortality Percentages by WCGOP

WCGOP adjusted the surface discard mortality percentages in 2013 (Somers et al., 2014) relative to previous years (e.g., Bellman et al, 2013). The GMT understands that these adjustments were made because of oversights and/or miscommunication during the previous years. The adjusted percentages for most of the rockfish species increased or remained the same within depth intervals (see examples in Table 3). For example, the mortality of yelloweye rockfish discarded at 10, 20, and > 20 fathoms was reported as 32 percent, 56 percent, and 100 percent in 2013, but was shown as 10 percent, 50 percent, and 100 percent in previous groundfish mortality reports. In some cases, the mortalities shown were lower during 2013 than during previous years (e.g., China rockfish at 11–20 fathoms). The complete list of surface mortality percentages for the commercial nearshore fishery can be found in Somers et al. (2014; Table A-2) for 2013 and in Tables 12a and 12b in Bellman et al. (2013) for 2012 and earlier years.

Table 3 Excerpts of discard mortality percentages shown in West Coast Groundfish Mortality Reports for the nearshore fixed gear fishery in 2013 (Somers et al., 2014) and prior to 2013 (e.g., 2012; Bellman et al., 2013).

Species	Surface Mortality (percentage) Prior to 2013			Surface Mortality (percentage) in 2013		
	0-10 fm	11-20 fm	> 20 fm	0-10 fm	11-20 fm	> 20 fm
Yelloweye rockfish	10%	50%	100%	32%	56%	100%
Canary rockfish	10%	55%	100%	32%	54%	100%
Blue rockfish	10%	60%	100%	29%	49%	100%
China rockfish	10%	50%	100%	24%	48%	100%
Quillback rockfish	10%	40%	100%	24%	48%	100%

Reasons for Increased Mortality of Yelloweye and Canary Rockfish in the Nearshore Fishery

The increase in mortality of yelloweye and canary rockfish between the 2012 (Bellman et al., 2013) and 2013 (Somers et al., 2014) mortality reports may partly be caused by the adjusted discard mortalities percentages for some depth categories. However, there are other reasons that may contribute to the increase in mortality. Those include:

- The shoreward non-trawl rockfish conservation area (RCA) was shifted from 20 fathoms to 30 fathoms off Oregon beginning in 2013. This RCA adjustment may have resulted in some shift of effort from the shallower depths (e.g., where the assumed discard mortality is 40–60 percent for rockfishes; Table 3) to the deeper depth strata (i.e., 21–30 fathoms), where the assumed mortality is 100 percent for most rockfishes).
- The abundance for both species is expected to increase as they rebuild (Wallace, 2011; Taylor, 2011), which may lead to higher encounter rates. The rate of recovery is probably faster than projected by assessments and rebuilding plans, because catch estimates of overfished species have typically been lower than the ACL (e.g., Bellman et al., 2013; Somers et al., 2014).
- Discard ratios and fishing effort change within each depth strata annually, depending on weather, fish abundance, price, and other factors. Effort and discard ratios can be found in WCGOP discard mortality reports (e.g., Table 11 in Somers et al., 2014).
- Observer coverage rates may be low enough that high annual variability is introduced simply by the sample size.

Impacts to the Overfished Species Projection Models Used by the GMT

The adjustments made to the discard mortality rates by WCGOP will have no effect on the GMT’s projection model that predicts overfished species mortality by the commercial nearshore fishery. The discard mortality rates used by the GMT’s nearshore projection model for the 2015-2016 Harvest Specifications and Management Measures Final Environmental Impact Statement (FEIS) are the same as those shown in Somers et al. (2014).

Effect of the Discard Mortality Adjustments to Annual Mortality Reports

Although the historical WCGOP reports posted online will remain unchanged, a WCGOP database used by the GMT (2002-2013 multi-year database) now includes the adjusted discard mortalities shown in Somers et al. (2014). Table 4 provides a comparison of yelloweye and canary mortalities shown in the published WCGOP groundfish mortality reports (e.g., Bellman et al., 2013) and the adjusted mortalities queried from the WCGOP multi-year database. The values are equal between the 2013 report (Somers et al., 2014) and the 2013 multi-year database, because both applied the adjusted discard mortality rates. The relative magnitude of increase was generally higher for yelloweye rockfish than for canary rockfish. Increased mortality using the adjusted rates was highest for 2008 and 2012 (yelloweye) and 2011 (canary).

Table 4. Effect of the adjusted WCGOP discard mortality rates for yelloweye and canary rockfish in the nearshore fishery (2008 - 2012). Mortality data (mt) are from WCGOP groundfish mortality reports (e.g., Bellman et al., 2013; original mortality) and the WCGOP multi-year database (adjusted mortality).

Year	Yelloweye Rockfish		Canary Rockfish	
	Original Mortality (mt) in WCGOP Reports	Adjusted Mortality (mt) in WCGOP Multi-year Database	Original Mortality(mt) in WCGOP Reports	Adjusted Mortality (mt) in WCGOP Multi-year Database
2013	2.71	2.71	10.5	10.5
2012	1.79	2.2	7.23	7.44
2011	0.76	0.9	15.49	17.12
2010	0.10	0.15	5.90	6.57
2009	0.50	0.54	3.50	3.85
2008	1.90	2.73	2.20	2.58

Annual Variability of Encounters with Yelloweye and Canary Rockfish by Sector

Each fishing sector shows some annual variability in catches for various species. This was displayed for yelloweye rockfish in the 2015-2016 FEIS (see Appendix B, Table B-20). Table 5 shows a summary of mortalities for yelloweye and canary rockfish over the past six years by sector. These mortalities were taken from the WCGOP groundfish mortality reports, and do not include the adjusted discard mortality rates. Variability in annual catches can be attributed to numerous factors, as described above.

Table 5. Annual mortalities for yelloweye and canary rockfish by sector (mt). Data are from WCGOP groundfish mortality reports. Adjustments for discard mortality for the nearshore fishery (see above) or for use of descending devices in the recreational fishery are not included. Set-asides are not shown.

Yelloweye rockfish

Sector	2007	2008	2009	2010	2011	2012	2013
Nearshore	3	2	0.5	0.1	0.8	1.8	1.76
Non-nearshore	1	1	1.3	0.3	0.3	0.3	0.3
Recreational	8.9	5.9	8.4	6.2	6.3	8.1	6.2
Non-Tribal Trawl	0	0.1	0.1	0.11	0.06	0.03	0.06

Canary rockfish

Sector	2007	2008	2009	2010	2011	2012	2013
Nearshore	4	2	3.5	5.9	15.5	7.2	10.5
Non-nearshore	0	2	0.3	0.0	0.1	0.1	1.0
Recreational	8.3	5.1	18.9	18.1	19.8	17.8	16.2
Non-Tribal Trawl	22.9	19.8	11.6	6.87	4.3	7.6	10.9

Note: Non-Tribal Trawl includes IFQ fixed gear, shoreside, and at-sea trawl fisheries combined.

Probability of Exceeding ACLs and Allocations

The GMT provided an analysis for the 2015-2016 FEIS to project the probability of exceeding the yelloweye rockfish ACL using a simulation approach (see pages B-54 through B-56 in Appendix B to the 2015-2016 FEIS). It was estimated that under the preferred alternative (where 0.6 mt was shifted from the non-nearshore to the nearshore fishery), the probability of exceeding the 18 mt ACL for 2015 was 2.1 percent. Even though it was shown in that analysis that some sectors may exceed their catch share or harvest guidelines during certain years, this analysis demonstrated that in reality, it is unlikely that all fisheries combined will exceed the ACL. Reasons include (a) deductions from the ACL (sometimes referred to as set-asides) are based on high or highest catches attained and (b) even though some sectors may exceed their allocation, it is unlikely that all sectors will exceed each of their allocations at the same time. The result has been annual catches being much lower than the ACL or optimum yield (OY) during recent years (Table 6). Data in Table 6 were taken from WCGOP groundfish mortality reports and were not updated based on the recent adjustment of nearshore discard mortality.

The GMT plans to conduct a similar simulation analysis as that shown in the 2015-2016 FEIS for both canary and yelloweye rockfish using updated data. Our intent is to have the results of that analysis in a supplemental report at the April Council meeting.

Table 6 . Annual yelloweye and canary rockfish mortality relative to the ACL (or OY) for 2006-2013. Data: from WCGOP groundfish mortality reports. Adjustments for discard mortality for the nearshore fishery (see above) or for use of descending devices in the recreational fishery are not included.

Yelloweye	Year							
	2006	2007	2008	2009	2010	2011	2012	2013
Metric								
ACL (mt)	27	23	20	17	14	17	17	18
Mortality (mt)	12.2	19.0	12.0	10.7	7.6	8.9	11.6	10.7
% of ACL	46%	83%	43%	63%	54%	52%	68%	59%

Canary	Year							
	2006	2007	2008	2009	2010	2011	2012	2013
Metric								
ACL (mt)	47	46	44	105	105	102	107	116
Mortality (mt)	57.0	43.0	39.0	38.1	43.2	52.4	44.8	43.1
% of ACL	121%	93%	89%	36%	41%	51%	42%	37%

References

- Bellman, M.AA., J. Jannot, M. Mandrup, J. McVeigh. 2013. Estimated discard and catch of groundfish species in the 2012 U.S. west coast fisheries. NOAA Fisheries, NWFSC Observer Program, 2725 Montlake Blvd E., Seattle, WA 98112.
- Taylor, I.G. 2011. Rebuilding analysis for yelloweye rockfish based on the 2011 update stock assessment. NOAA Fisheries, NWFSC, 2725 Montlake Blvd E., Seattle, WA 98112.
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