16. Assessment of the Other Rockfish stock complex in the Gulf of Alaska

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Executive Summary

Rockfish are assessed on a biennial stock assessment schedule to coincide with the availability of new trawl survey data. For Gulf of Alaska (GOA) rockfish in alternate (even) years we present an executive summary to recommend harvest levels for the next two years. Please refer to the last full stock assessment report for the Other Rockfish stock complex for further information regarding the assessment calculations of ABC and OFL (Clausen and Echave 2011, available online at http://www.afsc.noaa.gov/refm/docs/2011/GOAorock.pdf). A full stock assessment document with updated assessment results will be presented in next year's SAFE report.

We average the biomass estimates from the three most recent Gulf of Alaska (GOA) trawl surveys to estimate exploitable biomass and determine the recommended ABC for the Other Rockfish stock complex. This complex consists of 25 species of rockfish, as defined in Tribuzio and Echave (2012). This complex is classified as a Tier 5 stock, with the exception of sharpchin rockfish, which qualifies as a Tier 4 stock. The complex ABC and OFL are based on the sum of the Tier 4 and Tier 5 calculations for the individual species. For an off-cycle year, there is no new survey information for the Other Rockfish stock complex; therefore, the 2013 estimates are used in 2014.

Summary of Changes in Assessment Inputs

Changes in the input data: There were no changes made to the assessment inputs since this was an off-cycle year.

Changes in assessment methodology: There were no changes in assessment methodology since this was an off-cycle year.

Summary of Results

For the 2015 fishery, we recommend the maximum allowable ABC of 4,079 t for the Other Rockfish stock complex. Reference values for the Other Rockfish stock complex are summarized in the following table, with the recommended ABC and OFL values in bold. The stock was not being subjected to overfishing last year.

The SSC combined the ABC for the Western and Central GOA for the 2014 and 2015 fisheries, to be re-evaluated in the next full assessment. The ABC in the combined Western/Central GOA management areas was not exceeded in 2014, as of October 1. The 2014 Other Rockfish catch was lower in the Western Gulf than previous years because in 2014 the rockfish trawl fishery in this region was not opened to directed fishing in July due to concerns of going over TAC. However, this fishery was subsequently opened to directed fishing on October 15. Therefore, we expect the Other Rockfish catch in the Western/Central GOA management area to increase as a result of the rockfish fishery opening.

Quantity	As estimated or *specified last* year for:		As estimated or *recommended this* year for:	
	2014	2015	2015	2016
M (natural mortality rate)[a]	0.02-0.10	0.02-0.10	0.02-0.10	0.02-0.10
Tier[b]	5 or 4	5 or 4	5 or 4	5 or 4
Biomass (t)	83,383	83,383	83,383	83,383
F_{OFL} [a]	0.02-0.10	0.02-0.10	0.02-0.10	0.02-0.10
$maxF_{ABC}$ [a]	0.0015-0.0750	0.0015-0.0750	0.0015-0.0750	0.0015-0.0750
F_{ABC} [a]	0.0015-0.0750	0.0015-0.0750	0.0015-0.0750	0.0015-0.0750
OFL (t)	5,347	5,347	**5,347**	**5,347**
maxABC (t)	4,079	4,079	4,079	4,079
ABC (t)	4,079	4,079	**4,079**	**4,079**
Status	As determined *last* year for:		As determined *this* year for	
	2012	2013	2013	2014
Overfishing	No	n/a	No	n/a

[a]Values represent a range among species.

[b]All species are Tier 5 except sharpchin rockfish is Tier 4.

Updated catch data (t) for the Other Rockfish stock complex in the GOA are summarized in the following table. Source: NMFS Alaska Regional Office Catch Accounting System accessed through the Alaska Fisheries Information Network (AKFIN) database, http://www.akfin.org as of October 1, 2014.

Year	Western GOA	Central GOA	Eastern GOA		Gulfwide Total	Gulfwide ABC	Gulfwide TAC
			West Yakutat	E. Yak/ Southeast			
2013	202	477	77	63	819	4,045	1,080
2014	37	696	48	31	812	4,079	1,811

Area Apportionment

The apportionment percentages recommended below for 2015 are the same as in the 2013 assessment (for the 2014 fishery). For the 2014 fishery, the ABCs for the Western and Central GOA were combined (1,031 t total ABC, if separated, WGOA = 40 t and CGOA = 991 t). Please refer to the last full stock assessment report for information regarding the apportionment rationale for the Other Rockfish stock complex.

	Western/Central GOA	Eastern GOA (74.7%)		Total
		West Yakutat[1]	E Yakutat/ Southeast[1]	
Area Apportionment	25.3%	14.2%	60.5%	100%
Area ABC (t)	1,031	580	2,468	4,079
OFL (t)				5,347

[1]The West Yakutat and E Yakutat/Southeast values sum to the proportioned ABC of the Eastern GOA (74.7%).

Summaries for Plan Team

Species	Year	Biomass[1]	OFL	ABC	TAC	Catch[2]
Other Rockfish	2013	85,774	5,305	4,045	1,080	819
	2014	83,383	5,347	4,079	1,811	812
	2015	83,383	5,347	4,079		
	2016	83,383	5,347	4,079		

Stock/ Assemblage	Area		2014 OFL	2014 ABC	2014 TAC	2014 Catch[2]	2015 OFL	2015 ABC	2016 OFL	2016 ABC
Other Rockfish	WGOA/CGOA			1,031	1,031	733		1,031		1,031
	EGOA	WY		580	580	48		580		580
		EY/SE		2,470[3]	200	31		2,468		2,468
	Total		5,347	4,081	1,811	812	5,347	4,079	5,347	4,079

[1]Total biomass estimates from AFSC trawl surveys.

[2]Current as of October 1, 2014. Source: NMFS Alaska Regional Office Catch Accounting System via the Alaska Fisheries Information Network (AKFIN) database (http://www.akfin.org).

[3]The recommended ABC for EY/SE in 2014 was 2,468 t, but was changed to 2,470 t to account for northern rockfish in the EGOA.

Note: all values include northern rockfish in the eastern Gulf of Alaska only.

Responses to SSC and Plan Team Comments on Assessments in General

Because of the government shutdown in 2013, there was only sufficient time to compile SSC and Plan Team comments in last year's assessment. Since this is an "off" year and only an executive summary is presented, we respond here to priority comments. For comments relevant to or require a full assessment and/or model run, we will present responses in next year's full assessment.

"The SSC concurs with the Plan Teams' recommendation that the authors consider issues for sablefish where there may be overlap between the catch-in-areas and halibut fishery incidental catch estimation (HFICE) estimates. In general, for all species, it would be good to understand the unaccounted for catches and the degree of overlap between the CAS and HFICE estimates, and to discuss these at the Plan Team meetings next September." (SSC, December 2011)
The authors of HFICE we unable to delineate the overlap between CAS and HFICE (Tribuzio et al. 2014). The HFICE authors recommended waiting for more years of the restructured observer program so that a comparison between the two procedures can be made. The SSC reviewed that recommendation again with regards to the GOA shark assessment at its October 2014 meeting and agreed with the authors of that assessment (see Appendix 20.A of the 2014 BSAI or GOA shark assessments).

"The Teams recommended that SAFE chapter authors continue to include "other" removals as an appendix. Optionally, authors could also calculate the impact of these removals on reference points and specifications, but are not required to include such calculations in final recommendations for OFL and ABC." (Plan Team, September 2013).
This will be included in the next full assessment.

"The Teams recommend that stock assessment authors calculate biomass for Tier 5 stocks based on the random effects model and compare these values to status quo. In addition, the Teams recommend that the working group examine autorcorrelation in subarea recruitment when conducting spatial simulations for evaluating apportionment." (Plan Team, September 2014)

Various approaches to calculate biomass based on the random effects model were presented to the Plan Team in September 2013. Continued efforts are underway to determine the most appropriate approach for the species in this complex and will be presented in the next full assessment. Survey data do not support this approach for all of the species in the complex, but the authors are investigating using the random effects model on the full complex as well as some of the individual species.

"The SSC encourages assessment authors of stocks managed in Tier 5 to consider the recommendations found in the draft survey averaging workgroup report." (SSC, December 2012)
Please see the above comment in this section.

SSC and Plan Team Comments Specific to this Assessment

"The Team discussed a recommendation in the 2010 GOA Plan Team minutes to apply a productivity-susceptibility analysis, and clarified that this analysis is to be applied to the newly-formed other rockfish complex to evaluate the degree to which the species within the complex have similar life-history parameters and vulnerabilities to fishing pressure… As part of this analysis, the Team requests information on which target fisheries catch other rockfish, and how this may differ between GOA subareas." (Plan Team, November 2011)
The component species of the Other Rockfish complex have changed often over the time series of catch (1992-2014). The current Other Rockfish complex began in 2012 and since then, on average 74% of the catch of the Other Rockfish has come from the rockfish target fishery. We are examining whether it is possible to estimate a more complete time series of catch by target species for the current Other Rockfish complex and will be presented in the next full assessment.

"The SSC supports the Plan Team request for a productivity-susceptibility analysis for the Other Rockfish complex. The SSC also encourages the authors to examine the relationship between environmental conditions and the distribution and abundance of silvergray rockfish and harlequin rockfish because the trawl survey data suggests that these stocks may move in and out of the GOA in response to changing conditions." (SSC, December 2011)
The authors plan to investigate this in the next full assessment.

"In the interim period, the SSC requests that the authors carefully consider the recommendations of the rockfish CIE reviewers and that they work with NMFS Resource Assessment and Conservation Engineering division to evaluate the evidence that harlequin rockfish biomass is underestimated by the NMFS trawl and if this hypothesis is confirmed whether it is possible to develop a correction factor to improve future estimates for this species." (SSC, December 2013)
This issue is common to many species of rockfish and will be reported on in the next full assessment.

"Because DSR species are currently included within the "other rockfish" assessment for NMFS areas north of area 650, there will have to be reconsideration of current species groupings in the GOA. The SSC recommends that respective assessment authors work together to provide detailed examination of fishery catch and survey data by subarea and season for DSR and "Other" rockfish species. Catch data from all sources (retained, discard, State waters) should be included and where data are lacking this should be noted and would feed into the revised assessments(s). Assessment authors should also attempt to derive a plausible range of historical catch trends where catch data may not be available. The goal of this work is to fully account for rockfish catches and align potential rockfish groupings to improve our ability to monitor and identify conservation issues. This may include species groupings that are biologically similar (i.e. with similar life history attributes) or potentially grouped as Tier 6 species where reliable estimates of biomass are unavailable" (SSC, October 2014)
The authors will work with the DSR assessment authors to begin this investigation and will report on it in the next full assessment

Literature Cited

Clausen, D.M. and K.B. Echave. 2011. Assessment of the "Other Rockfish" Stock Complex in the Gulf of Alaska. *In* Stock assessment and fishery evaluation report for the groundfish resources of the Gulf of Alaska for 2011. North Pacific Fishery Management Council, 605 W 4th Ave, Suite 306, Anchorage, AK 99501. Pgs. 1239 – 1280.

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Tribuzio, C. A., J. R. Gasper, and S. K. Gaichas. 2014. Estimation of bycatch in the unobserved Pacific halibut fishery off Alaska. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-265, 506 p.

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