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

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Executive Summary

The Other Rockfish (OR) complex in the Gulf of Alaska (GOA) is assessed on a biennial stock assessment schedule to coincide with the availability of new trawl survey biomass estimates. 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 OR stock complex for further information regarding the assessment calculations of ABC and OFL (Tribuzio and Echave 2015). A full stock assessment document with updated assessment results will be presented in next year's SAFE report.

This complex consists of 25 species of rockfish, which are a mixture of Tier 4, 5, and 6 species (Tribuzio and Echave 2015). The complex acceptable biological catch (ABC) and overfishing level (OFL) are based on the sum of the ABC and OFL calculations for the individual species. For an off-cycle year, there is no new survey information for the OR stock complex; thus, the 2015 estimates are used in 2016 assessment.

Summary of Changes in Assessment Inputs

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

Summary of Results

There is no evidence to suggest that overfishing is occurring for the OR complex in the GOA because the OFL has not been exceeded. Total OR catch in 2015 was 1,111 t and catch in 2016 was 1,363 t as of October 3, 2016. We continue the recommendations from last year's full assessment. **The recommended ABC for 2017 is 5,773 t (5,769 t from the OR plus 4 t from the northern rockfish assessment in the Eastern GOA) and OFL is 7,424 t for the OR complex.** There are currently no directed commercial fisheries for OR species in federally managed fisheries; however, seven of the species are managed as Demersal Shelf Rockfish (DSR) and assessed separately in the East Yakutat/Southeast region of the Eastern GOA (i.e., NMFS area 650, Tribuzio and Echave 2015) and have directed fisheries. The authors, Plan Team and SSC recommended that the ABCs for the Western GOA and Central GOA be combined beginning in the 2014 fishery. We recommend continuing with this combination, as data do not suggest any developing conservation concerns that would be alleviated by splitting the ABCs.

ABC and OFL recommendations for the full OR complex

	As estimated or *specified last* year for:		As estimated or *recommended this* year for:	
All OR Combined	2016	2017	2017	2018
Tier	4/5/6	4/5/6	4/5/6	4/5/6
OFL (t)	7,424	7,424	**7,424**	7,424
maxABC (t)	5,769	5,769	5,769	5,769
ABC (t)	5,769	5,769	**5,769**	5,769
	As determined *last* year for:		As determined *this* year for:	
Status	2014	2015	2015	2016
Overfishing		n/a		n/a

Updated catch data (t) for the OR stock complex in the GOA are summarized in the following table with ABCs and TACs. Source: NMFS Alaska Regional Office Catch Accounting System accessed through the Alaska Fisheries Information Network (AKFIN) database, http://www.akfin.org as of October 3, 2016.

Year	Western GOA	Central GOA	Eastern GOA West Yakutat	Eastern GOA E. Yak/ Southeast	Gulfwide Total	Gulfwide ABC*	Gulfwide TAC
2015	212	844	36	19	1,111	5,773	1,811
2016	147	1,134	47	35	1,363	5,773	2,308

* The Gulfwide ABC in this table includes 4 t brought over form the northern rockfish assessment to cover catch of that species in the Eastern GOA.

Area Apportionment

Area apportionment was estimated by the random effects model. Beginning in the 2014 fishery, the ABCs for the Western and Central GOA were combined, which is continued here for the 2017 fishery (1,534 t total ABC, if separated: WGOA = 55 t and CGOA = 1,479 t).

Total OR ABC apportioned by area

	Western/Central GOA	Eastern GOA West Yakutat	Eastern GOA E Yakutat/ Southeast	Total
Area ABC (t)	1,534	574	3,665*	5,773
OFL (t)				7,424

*The East Yakutat/Southeast ABC includes the additional tons that are transferred from the northern rockfish assessment to the OR assessment, which was 4 t in 2016.

Summaries for Plan Team

Species	Year	Biomass[1]	OFL	ABC	TAC	Catch[2]
Other Rockfish	2015	83,383	5,347	4,081[3]	1,811	1,111
	2016	104,826	7,424	5,773[3]	2,308	1,363
	2017	104,826	7,424	5,773[3]		
	2018	104,826	7,424	5,773[3]		

Stock/ Assemblage	Area	2016 OFL	2016 ABC	2016 TAC	2016 Catch[2]	2017 OFL	2017 ABC	2018 OFL	2018 ABC
Other Rockfish	WGOA/CGOA		1,534	1,534	1,281		1,534		1,534
	EGOA								
	WY		574	574	47		574		574
	EY/SE		3,665[3]	200	35		3,665[3]		3,665[3]
	Total	7,424	5,773	2,308	1,363	7,424	5,773	7,424	5,773

[1]Total biomass estimates from the random effects model for the Tier 4/5 species only.

[2]Current as of October 3, 2016. Source: NMFS Alaska Regional Office Catch Accounting System via the Alaska Fisheries Information Network (AKFIN) database (http://www.akfin.org).

[3]These ABCs include the additional tons that are transferred from the northern rockfish assessment to the OR assessment, which was 4 t in 2016.

Responses to Comments and Research Priorities

Responses to the below listed SSC and Plan Team Comments will be provided in the next full stock assessment report.

SSC and Plan Team Comments on Assessments in General

"Secondly, a few assessments incorporate multiple indices that could also be used for apportionment. The Team recommends an evaluation on how best to tailor the RE model to accommodate multiple indices." (Plan Team, November 2015)

"Finally, an area apportionment approach using the RE model which specifies a common "process error" has been developed and should be considered. This may help in some situations where observation errors are particularly high and/or vary between regions." (Plan Team, November 2015)

"The SSC requests that stock assessment authors bookmark their assessment documents and commends those that have already adopted this practice." (SSC, October 2016)

SSC and Plan Team Comments Specific to this Assessment

"Potential areas of future research include: verifying that these species are more similar to each other in their complex than to species in other complexes with statistical models such as ANOVA or investigating the relationship between individual species in a multivariate approach (i.e., k-nearest neighbors)." (Plan Team, November 2015)

"The SSC joins the PT in suggesting caution regarding use of maximum catch for OFL for the Tier 6 species in this complex going forward, as OFL could only remain static or increase." (SSC, December 2015)

"The SSC recommends work continue on the following as indicated by the PT and authors: 1) verifying that species in this complex are more similar to each other than to other complexes using ANOVA or similar techniques, 2) investigating whether there should be a correction factor for NMFS trawl data for those species not well sampled by trawl, and 3) investigating how to incorporate IPHC index into assessment for the 5 species that the IHPC surveys well." (SSC, December 2015)

Literature Cited

Tribuzio, C.A. and K.B. Echave. 2015. 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. 1351 – 1464. http://www.afsc.noaa.gov/REFM/Docs/2015/GOAorock.pdf

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