

# Chapter 10: Assessment of the Northern Rockfish Stock in the Gulf of Alaska (Executive Summary)

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## Introduction

Rockfish are assessed on a biennial stock assessment schedule to coincide with new survey data. We use a separable age-structured model as the primary assessment tool for Gulf of Alaska northern rockfish. This consists of an assessment model, which uses survey and fishery data to generate a historical time series of population estimates and a projection model, which uses results from the assessment model to predict future population estimates and recommended harvest levels. For Gulf of Alaska rockfish in alternate (even) years, we present an executive summary to recommend harvest levels for the next (odd) year. For this off-cycle year, we only updated the 2009 projection model estimates with revised catch data for 2009 and a new catch estimate for 2010. Please refer to last year's full stock assessment, which is available online, for further information regarding the assessment model, (Heifetz et al. 2009, <http://www.afsc.noaa.gov/refm/docs/2009/GOAnorthern.pdf>). A full stock assessment document with updated results for the assessment and projection model will be presented in next year's SAFE report.

## Updated catch and projection

New information for this year's projection is updated 2009 catch of 3,925 t and the 2010 catch as of October 2nd of 3,579 t. Catch estimates used in last year's model were 3,843 t and 4,436 t for 2009 and 2010, respectively. For the 2011 fishery, we recommend the maximum allowable ABC of 4,857 t from the updated projection. This ABC is similar to that projected in last year's SAFE for 2011 (4,810 t). The corresponding reference values for northern rockfish are summarized in the following table, with the recommended ABC and OFL values in bold. The stock is not overfished, nor is it approaching overfishing status.

Quantity/Status	Last Year 2009		This Year	
	2010	2011	2011	2012
<i>M</i> (natural mortality)	0.06	0.06	0.06	0.06
Specified/recommended Tier	3a	3a	3a	3a
Projected biomass (ages 2+)	103,300	99,600	100,463	97,767
Female spawning biomass (t)				
Projected	34,790	33,600	33,961	32,671
<i>B</i> <sub>100%</sub>	61,370	61,370	61,368	61,368
<i>B</i> <sub>40%</sub>	24,550	24,550	24,547	24,547
<i>B</i> <sub>35%</sub>	21,480	21,480	21,479	21,479
<i>F</i> <sub>OFL</sub>	0.071	0.071	0.071	0.071
<i>maxF</i> <sub>ABC</sub> (maximum allowable = <i>F</i> <sub>40%</sub> )	0.059	0.059	0.059	0.059
Specified/recommended <i>F</i> <sub>ABC</sub>	0.059	0.059	0.059	0.059
Specified/recommended OFL (t)	6,070	5,730	<b>5,784</b>	5,498
Specified/recommended ABC (t)	5,100	4,810	<b>4,857</b>	4,616
Is the stock being subjected to overfishing?	No	No	No	No
Is the stock currently overfished?	No	No	No	No
Is the stock approaching a condition of being overfished?	No	No	No	No

\*Projected ABCs and OFLs for 2012 are derived using an expected catch value of 3,852 t for 2011 based on recent ratios of catch to ABC. This calculation is in response to management requests to obtain a more accurate one-year projection.

## Area Apportionment

The apportionment percentages are identical to last year, because there is no new survey information. The following table shows the recommended apportionment for 2011. Please refer to last year's SAFE report for information regarding the apportionment rationale for northern rockfish.

	Western	Central	Eastern*	Total
Area Apportionment	52.99%	46.96%	0.05%	100%
Area ABC (t)	<b>2,573</b>	<b>2,281</b>	<b>3</b>	<b>4,857</b>
OFL (t)				<b>5,784</b>

\*For management purposes, the small ABC of northern rockfish in the Eastern area is combined with other slope rockfish.

## Responses to Council, SSC, and Plan Team Comments

The GOA Plan Team 2009 minutes included the following comments concerning all stock assessments:

*“That the AFSC coordinate with the Regional Office a source for catch data to ensure that authors use the same set of reports for recent years (e.g., for the current and previous year). This also applies for prohibited species catch (PSC) tables as well as non-target species catch.”*

A coordinated effort between Fisheries Monitoring and Assessment (FMA) division, the Alaska Regional Office (AKRO) and the Pacific States Marine Fisheries Commission (PSMFC) was initiated in 2009 to utilize the Alaska Fisheries Information Network (AKFIN) as a data warehouse for Alaska Fisheries Science Center (AFSC) economists and stock assessment scientists. A workshop was held in February 2010 at the Auke Bay Laboratories (ABL) where FMA, AKRO, AKFIN, and ABL staff discussed the types of fishery data required each year for the stock assessments and SAFE reports. Included in this workshop was an introduction to the new AKFIN Answers Dashboard site and newly added North Pacific Observer (NORPAC) database tables. The AKFIN site is a coordinated effort between AKRO, FMA, and AKFIN to house and distribute fishery data. The new NORPAC tables maintain continuity of observer data across the entire historical time series. Following this workshop a reports committee consisting of AFSC and AKFIN staff was developed to produce standardized catch reports available through the AKFIN Answers site. These reports are in the testing phase and will be available for assessments in 2011.

*“For fisheries where bycatch in halibut fisheries apply, authors are requested to coordinate with the Regional Office or other appropriate agency to account for these removals.”*

Northern rockfish are rarely caught in the halibut fishery so this is not an issue.

The SSC December 2009 minutes included the following comments concerning all stock assessments:

*“The SSC suggests that description of the apportionment rationale in each SAFE chapter of area-apportioned species would be helpful to the reader.”*

The apportionment rationale for northern rockfish is explained in the *Apportionment of ABC* section of the 2009 full SAFE report under *Projections and Harvest Alternatives*. Apportionment is determined based on the geographic distribution of northern rockfish biomass in the trawl surveys. This distribution has been computed as a weighted average of the percent biomass distribution for each area in the three most recent trawl surveys. Each successive survey is given a progressively heavier weighting using factors of 4, 6, and 9, respectively.

The GOA Plan Team 2009 minutes included the following comments concerning all rockfish:

*“Some rockfish assessments may have revised maturity estimates and the Team would like to review comparisons of these studies in September 2010. In particular, locations and timing of samples, and recommendations from assessment authors for approaches to modifying assessments.”*

A report on estimating rockfish maturity in the Gulf of Alaska was prepared and presented by ABL rockfish staff for the September 2010 Plan Team meeting. The GOA rockfish assessment authors will investigate methods for incorporating new maturity information into the assessment for 2011. Allowing for uncertainty of maturity estimates within the assessment is a possibility, but further exploration of such methods is needed.

The GOA Plan Team 2009 minutes included the following comments concerning northern rockfish:

*“Plan Team recommendations for the next assessment:*

- 1.) The Plan Team supports the assessment authors’ suggestion to change the plus group for age compositions from 23 to 30 years.*
- 2.) The Plan Team also supports investigating a recent publication which suggests changes to the maturity curve for northern rockfish, which might be considered in an upcoming model.*
- 3.) The Plan Team encourages the authors to bring relevant age data analyses and maturity comparisons forward next September during the off year for this assessment.”*

See response above.

The SSC December 2009 minutes included the following comments concerning northern rockfish:

*“The SSC looks forward to seeing the new maturity data that has recently become available for this species and the impact on incorporation of those data into the assessment model next year. The SSC agrees with the authors’ suggestion to expand the plus group age category from 23 years to at least 30 years, noting that a substantial proportion of the assessed stock appears to be in the current plus age group.”*

This comment will be addressed in the 2011 stock assessment for northern rockfish.

## **Research Priorities**

It is critically important to rockfish stock assessments that the GOA trawl surveys continue. There is little information on larval, post-larval, or early juvenile stages of rockfish. Habitat requirements for these stages are mostly unknown. Research on early life history stages is vital to effective management of rockfish.

## Summaries for Plan Team

Species	Year	Biomass <sup>1</sup>	OFL	ABC	TAC	Catch <sup>2</sup>
Northern rockfish	2009	90,557	5,204	4,362	4,362	3,925
	2010	103,300	6,070	5,098	5,098	3,579
	2011	100,463	5,784	4,857		
	2012	97,767	5,498	4,616		

<sup>1</sup>Biomass estimates from the age structured model, 2010 and 2011 values are for total biomass (age 2+).

Stock/ Assemblage	Area	2010				2011		2012	
		OFL	ABC	TAC	Catch <sup>2</sup>	OFL	ABC	OFL	ABC
Northern rockfish	W		2,703	2,703	2,033		2,573		2,446
	C		2,395	2,395	1,546		2,281		2,168
	E*						3		2
	Total	6,070	5,098	5,098	nd of 3,579	5,784	4,857	5,498	4,616

<sup>2</sup>Current as of October 2, 2010 (<http://www.fakr.noaa.gov/2010/2010.htm>)

\* For management purposes, the small ABC for northern rockfish in the Eastern Gulf of Alaska is combined with other slope rockfish.