

8. Assessment of the Flathead Sole Stock in the Gulf of Alaska (Executive Summary)

William T. Stockhausen
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8.1 Introduction

In 2006, the Gulf of Alaska flathead sole (*Hippoglossoides elassodon*) stock was moved to a biennial stock assessment schedule to coincide with new survey data. A discussion at the September 2006 Groundfish Plan Team meetings concluded the following two important points for updating information in off-year assessments:

- 1) Anytime the assessment model is re-run and presented in the SAFE Report, a full assessment document **must** be produced.
- 2) The single-species projection model **may** be re-run using new catch data without re-running the assessment model.

Thus, on alternate (even) years, parameter values from the previous year's assessment model and total catch information for the current and previous year are used to make projections via the single species projection model for the following two years and to recommend ABC levels for those years.

Because no new survey data was available this year, option 2 above was followed to update information for the 2012 stock assessment. Thus, the single species projection model was run using parameter values from the accepted 2011 assessment model (the base model, Stockhausen et al. 2011¹), together with updated catch information for 2011 and 2012, to predict stock status for flathead sole in 2013 and 2014 and to make ABC recommendations for those years.

8.2 Updated catch and projection

Flathead sole is managed in Tier 3a. New information available to update the projection model consists of the total catch for 2011 (2,728 t) and the current catch for 2012 (1,629 t as of Sept. 22, 2012). To run the projection model to predict ABC's for 2013 and 2014, estimates are required for the total catches in 2012 and 2013. The final catch for 2012 was estimated by dividing the current catch by the ratio of the catch in the same week in 2011 as the current catch (week 38) to the final 2011 catch. The estimated final catch for 2012 (1,958 t) was also used as the estimate for the final 2013 catch. Based on the updated projection model results, the recommended ABC's for 2013 and 2014 are 48,738 t and 49,771 t, respectively, while the OFL's are 61,036 t and 62,296 t. The new ABC recommendation and OFL for 2013 are similar to those developed using the 2011 full assessment model (48,081 t and 60,219 t). The principal reference values are shown in the following table, with the recommended values in bold:

¹Stockhausen, W., M. Wilkins and M. Martin. 2011. 8. Assessment of the Flathead Sole Stock in the Gulf of Alaska. In: Stock assessment and fishery evaluation report for the groundfish resources of the Gulf of Alaska. North Pacific Fishery Management Council, PO Box 103136, Anchorage, AK. <http://www.afsc.noaa.gov/REFM/docs/2011/GOAflathead.pdf>.

Quantity	As estimated or specified last year (2011) for:		As estimated or specified this year (2012) for:	
	2012	2013	2013	2014
M (natural mortality)	0.2	0.2	0.2	0.2
Specified/recommended tier	3a	3a	3a	3a
Total biomass (Age 3+; t)	292,189	286,274	288,538	285,128
Female Spawning Biomass (t)	104,301	105,127	106,377	107,178
$B_{100\%}$	103,868	103,868	103,868	103,868
$B_{40\%}$	41,547	41,547	41,547	41,547
$B_{35\%}$	36,354	36,354	36,354	36,354
$F_{OFL} = F_{35\%}$	0.593	0.593	0.593	0.593
$max F_{ABC} = F_{40\%}$	0.450	0.450	0.450	0.450
$recommended F_{ABC}$	0.450	0.450	0.450	0.450
OFL (t)	59,380	60,219	61,036	62,296
max ABC (t)	47,407	48,081	48,738	49,771
ABC (t)	47,407	48,081	48,738	49,771
Status	As determined last year (2011) for:		As determined this year (2012) for:	
	2010	2011	2011	2012
Overfishing	no	n/a	no	n/a
Overfished	n/a	no	n/a	no
Approaching overfished	n/a	no	n/a	no

8.3 Area Apportionment

Area apportionment for ABC is currently based on the relative abundance (biomass) of flathead sole found within each management area in the last GOA groundfish survey. The recommended ABC area apportionment percentages are identical to last year because the last GOA groundfish survey was conducted in 2011. The following table shows the recommended area apportionments for 2013 and 2014 are:

	West				Total
	Western	Central	Yakutat	Southeast Outside	
Area Apportionment	32.3%	54.5%	9.6%	3.6%	100.0%
2013 ABC (t)	15,729	26,563	4,686	1,760	48,738
2014 ABC (t)	16,063	27,126	4,785	1,797	49,771

8.4 Research Priorities

The assessment model is being revised to incorporate size-based approaches to fishery and survey selectivity, stock-recruit functions, and temporal stanzas for model parameters, as well as to accommodate fishery age compositions and to estimate ageing error, size-at-age, and weight-at-size within the model. The utility of potential environmental predictors of recruitment or catchability (e.g., temperature) will also be investigated, as will the use of ADF&G survey data. Continued collection and processing of age samples from both the survey and the fishery remains a critical priority for this assessment.

8.5 Summaries for Plan Team

Species	Year	Biomass ¹	OFL ^{2,3}	ABC ^{2,3}	TAC ^{2,3}	Catch ⁴
Flathead sole	2011	297,130	61,412	49,133	10,587	2,728
	2012	292,345	59,380	47,407	30,319	1,629
	2013	288,538	61,036	48,738		
	2014	285,128	62,296	49,771		

¹ Age 3+ biomass from the assessment and projection models.

² http://www.fakr.noaa.gov/sustainablefisheries/specs11_12/goa_table1.pdf

³ http://www.fakr.noaa.gov/sustainablefisheries/specs12_13/goa_table1.pdf

⁴ As of Sept. 22, 2012.

Stock/ Assemblage	Area	2012				2013		2014	
		OFL ¹	ABC ¹	TAC ¹	Catch ²	OFL ³	ABC ³	OFL ³	ABC ³
Flathead sole	W	--	15,300	8,650	257	--	15,729	--	16,063
	C	--	25,838	15,400	1,372	--	26,563	--	27,126
	WYAK	--	4,558	4,558	0	--	4,686	--	4,785
	SEO	--	1,711	1711	0	--	1,760	--	1,797
	Total	59,380	47,407	30,319	1,629	61,036	48,738	62,296	49,771

¹http://www.fakr.noaa.gov/sustainablefisheries/specs12_13/goa_table1.pdf

²As of Sept. 22, 2012.

³Based on the assessment and projection models.

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